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## RORSCHACH: TWENTY YEARS AFTER<sup>1</sup>

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This is not the first historic crisis of humankind. But it is the first which so directly and immediately affects so many millions of men and women. Never before has crisis had such far-reaching involvement, for never before has war been "total." The precarious balance in which we find the mental health and well-being of men and women is probably without historical counterpart, for today there can be no refuge, no escape, and no isolation.

Behind the all-pervading economic turmoil, emotional panic, moral bankruptcy, and social disintegration of our times lie intellectual confusion, tension, frustration, and instability, and their broods of conflicts and contradictions. For us whose work is related to the maintenance of sanity and health, the hour is charged with responsibility; and no meeting of psychologists and psychiatrists today can be free from earnest self-searching.

Such a *milieu* makes it both fitting and inevitable that this twentieth milestone in the history of the Rorschach Method should be devoted to an examination of our tools, an evaluation of their achievements, and a study of their potentialities in the light of the psychological and psychiatric needs of the moment. What called them into being? What has been done with them? How well have they been used? How keen are their cutting edges? How can they be made even keener?

To understand the Rorschach Method, it seems necessary to picture the background of its birth—a birth of peculiar interest to us today, because it was born of revolt in the world of psychological thought.

The atomistic conception of personality had met with challenge. Personality as a bundle of characteristics, each subject to identification, segregation, and measurement and together forming

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a whole which was merely the sum of its parts, encountered resistance. The newer disciplines—Gestalt psychology, Psychoanalysis, Typology, Psychodiagnostics, and the Psychology of *Verstehen*, postulated personality as more than the sum total of assembled static qualities and rather as a living, functioning whole, a dynamic synthesis.

Thus was formulated a new approach to the study of personality. The problem of how to study a synthesis rather than a conglomeration of isolated parts still remained, for both research and practice had made it clear that personality possessed aspects which eluded the stereotyped and conventionalized paper-and-pencil tests, the questionnaires, the rating scales, and laboratory techniques of measurements.

There ensued a quest for the elusive which opened new avenues and forged new tools. Projective techniques were developed so that today many students of personality no longer rely exclusively upon answers to questions or on minute reactions elicited in the laboratory routine. Nor do they judge the individual solely by comparing him with his fellows.

They prefer to place the individual in a specific situation, presenting him with words, unfinished sentences, plastic materials, puppets, pictures, or ink-bLOTS, and study what he does. Conduct in specific situations now dominates the attention of these students of personality. They evaluate the individual in terms of himself, knowing that mental, emotional, and experiential equipment and background will lead him to react in his unique way. His reaction will yield an insight into his mental processes, fantasy life, desires, emotionality, talents, and the like and thus permit us, by their revelations and projections, to reconstruct his personality (Frank, 81, 82; Updegraff, 345; Horowitz and Murphy, 329; Grimes, 327).

Thus armed with approach and method, we found ourselves confronted with the problem of evaluation. The classical dilemma of objectivity *vs.* subjectivity still challenges us. Will quantitative method permit of application to qualitative subject matter? This is a question which, although not fully answered, has produced during the last decade efforts to combine and interweave the experimental and the intuitive attitudes toward personality (Spearman, 340; Vernon, 346; Allport, 318; Dashiell, 60).

Rorschach was the father of no new discipline. He formulated no specific theory. But his procedure was such as to leave little doubt that to him personality was a functioning unit. His early

monograph (251) presented a psychogram which portrayed personality as a complex structure of constituent patterns in dynamic union; and in such a union it was inevitable that change in one process should be accompanied by change in others.

Thus Rorschach, swept along by the revolt against atomism, must have conceived of personality as determined ultimately by the organization, interplay, and uniqueness of those constituent patterns which represented for him dynamically interrelated mental processes. As the creator of the ink-blot method of personality diagnosis, he pioneered in the development of projective techniques (293), and his method inspires us to perfect a synthesis of the experimental and the intuitive attitudes toward the study of personality.

Rorschach, however, has not escaped the skeptics. Many students of personality, temperamentally opposed to prosaic ink-bLOTS as media of personality expression, uncritically resist the method. Personality is a sacred thing, closely associated with human dignity, and there should be no surprise in discovering that there are those to whom it is offensive to think of ink-bLOTS as oracles of the soul. To them, human personality is too rich, too variegated, and its manifestations too subtle and too devious to permit of revelation by meaningless ink-bLOTS.

Others believe that the Rorschach Method involves the dangers inherent in permitting the specific to cast too much light on the general. Among them are those who, guided by the old psychology with its emphasis on the dependence of sensation on specific stimuli, insist that a method based solely on *visual* perception can reveal only one aspect of personality. They fail to understand Rorschach's concept of interpretations of the blots as "apperceptions," determined not only by physical causes but even more by the psychological "structure" of the individual at the time, depending upon his experiences, emotions, attitudes, and mental set (Schachtel, 263; Hunter, 137).

And also among the skeptics are those for whom it is difficult to believe, despite their eagerness for a new method of personality study, that specific phases of the personality revealed in certain limited situations can be relied upon to represent personality in general (Allport, 318). Among them, the Rorschach response picture is not accepted as a projection of personality in its characteristic mental and emotional potentialities.

On the other hand, many students of personality have come to

believe that promising possibilities are inherent in the Rorschach technique. With the passing of years, their number has increased so that "Rorschach" has become a familiar term in the idiom of psychologists, psychiatrists, counsellors, teachers, social workers, and even judges—in fact, among nearly all who treat human beings and their personality problems. In the last decade, hardly a book, article, or review pertaining to personality in any language or in any country omits mention of the Rorschach technique (Allport, 318; Bailey, 9; Blackburn, 34; Biäsch, 28; Braunshausen, 48; Burks and Jones, 325; Burt, 53; Frank, 81, 82; Greulich, *et al.*, 92; Graf, 90; Guilford, 93; Kretschmer, 183; Stagner, 341; Watson, 304).

Rorschach grows ever in influence at such a pace that keeping abreast of the literature would become burdensome but for the aid of a number of bibliographies (Vernon, 298, 299, 300, 301; Binder, 30; Hertz, 114; Piotrowski, 235; Gurdham, 94; Krugman, 184). Study has been promoted and fostered by the use of centers of teaching and research. Such centers include those under the leadership of Schneider, Binder, Skalweit, Loosli-Usteri, and Monnier, to mention a few who are (or were) active in continental Europe; Gurdham and Vernon in England; and an ever-increasing number in the United States—Oberholzer, Levy, Wells, Klopfer, Piotrowski, Kelley, Rickers, and Beck, and our own center at Western Reserve University. And the Rorschach Institute, through the *Rorschach Exchange* which it now fosters, has helped to extend the scope of the method and to offer opportunity for its refinement, development, and, what is most important, periodic evaluation (154).

Probably no topic, however, is so provocative to "Rorschachers" and so inviting to discussion and debate as the problem of standardization. The very word arouses partisanship (if "partisanship" may be used to describe scientific differences). At one extreme stand those who resent such a term when applied to our instrument of "art" and who reluctantly suggest that, if some such concept must be entertained, let it be named "refinement" or "rationalization," to avoid the stigma of rigid "schematization" (Klopfer, 171). At the other are those to whom standardization is our most important task (Beck, 17, 18; Hertz, 120, 123). Both positions have received extensive attention, and papers have been published by Klopfer (171), Frank (80), Hertz (123), Shuey (276), Klopfer, Krugman, Kelley, Murphy, and Shakow (176), while the latest symposium has been summarized by Miale (204).

Hence, at the risk of heresy, I propose to devote myself to the thought that standardization is no longer debatable, that to the extent that it is either possible or desirable, standardization is the outstanding feature of the 20 years since Rorschach. I propose to content myself with a brief survey of our progress toward standardization and toward the establishment of reliability and validity. But, again risking heresy, I emphasize, I do not mean standardization in either the sense of rigidity or inflexibility. I use the term because our emphasis has been upon the development of our method as an art at the expense of those considerations which, in the last analysis, would place the Rorschach Method within the bounds of reliability and practicability. If, in this brief survey, I emphasize certain studies and overlook others, it is only because preference has been given to systematic treatments and to studies with research orientation.

#### ADMINISTRATION AND SCORING

Both in the administration of the method and in the scoring of responses, standardization has made rapid and forward strides. These have come in response to the desires of workers for aid, support, and reinforcement which cannot be made available without standardization.

A desire for certainty and precision in procedure has nurtured a demand for published instructions. Rorschach's original monograph has been reissued in new editions (251). Included now in the monograph is Rorschach's second article on the application of the method to psychoanalysis, published posthumously by Oberholzer. Unfortunately, no translation of the original study has ever been published, and it is still unknown to many workers in the field.

In the course of the years, other workers have described the method, some with more and some with less detail (Apolczyn, 6; Beck, 12; Bratt, 47; Piotrowski, 234; Loosli-Usteri, 190; Hertz, 114, 115, 116, 128; Klopfer, 165, 166, 167; Hunter, 137; Dubitscher, 69, 70, 71; Löpfe, 192; MacCalman, 193; Mandowsky, 197; Rizzo, 247; Monnier, 207; Salas, 257; Soukup, 281; Schneider, 268; Vernon, 298). Three manuals have appeared in recent years, in French by Loosli-Usteri (161, 191), in German by Schneider (269), and in English by Beck (21). Beck's manual, the first book to be published in English, marks an important step forward, since it is the first to emphasize the objective-standardized approach to the method and call a halt to the exclusive reliance on personal norms and subjective estimate.

The series of articles by Vernon (298, 299, 300, 301, 302), Gurdham (94, 95, 96, 97, 98, 99), and Monnier (207, 208) have made the method accessible to larger numbers while the work of Klopfer, Piotrowski, Kelley, and other members of the New York research groups (164-180) have given probably the most extensive accounts with the most detailed illustrative material. The studies of the Brush Foundation and the Western Reserve University Department of Psychology, I should like to believe, have contributed at least in a measure to a better acquaintance with a more precise procedure (Hertz, 113-133).

A desire for accurate, extensive, and complete records has inspired more efficient methods for recording data, summarizing information, and developing techniques to yield greater help in interpretation. These include, for example, symbols (Beck, 21), mimeographed blot outlines (Vernon, 298), miniature blot photographs (Klopfer and Davidson, 174), and code charts (Hertz, 116; Fleischer and Hunt, 78), all of which are devised to expedite administering the test and scoring the results (Hertz, 128).

A desire for a systematic form of questioning to elicit essential information has led to the development of the "systematic inquiry" which embraces a discussion of responses, conspicuous omission of details and determinants of responses, and includes a procedure of "probing" or of what Klopfer calls "testing the limits" by provoking additional responses to determinants not used in the performance proper (166). It should be noted that at no time have questions themselves been rigidly standardized. Along with a minimum of uniformity, emphasis has been placed on natural conversation and flexibility of approach.

Important advances in the direction of standardization have likewise been made in the scoring. The desire to provide inexperienced workers with guides (Klopfer, 171; Hirning, 176; Hertz, 123; Beck, 21), to eliminate the problem of the personal equation (Kelley, 175), to make the test available as an instrument of research (Hertz, 123), to permit of coöperative projects among examiners by making possible comparisons of material obtained by several investigators (Klopfer, 171; Hertz, 123), and to increase the reliability and validity of the method (Beck, 17, 24; Hirning, 176; Hertz, 123) has induced a modification of the stress on subjective estimate and "empathy" (Bleuler, 38; Wells, 306; Benjamin, 26) by efforts to develop objective criteria for the various scoring categories (Beck, 18, 20; Hertz, 123, 125).

Hence, after extensive study (3, 4, 5, 245), many Rorschach factors have been elaborated, others altered, a few discarded, and still others more clearly defined and differentiated (Vernon, 298, 299; Guirdham, 94; Beck, 17, 21; Meltzer, 202; Loosli-Usteri, 191; Hertz 118-122, 124; Monnier, 207, 208; Thornton, 289; Just, 150; Rickers, 244; Schachtel and Hartoch, 264; Sender and Klopfer, 271; Piotrowski, 228; Klopfer, Burchard, *et al.*, 173). Probably the most extensive refinement of the scoring system has been introduced by Klopfer and the New York research groups (59, 165-180). Frequency tables have been published for certain Rorschach categories (Beck, 21; Loosli-Usteri, 191; Hertz, 117), and percentage charts prepared to expedite the work of scoring (Hertz, 127). The Brush Foundation has concerned itself especially with the problem of the scientific determination of scoring criteria (118-122). The need for precise formulations has been emphasized by Beck (24), who would resort to operationism recommending operational definitions of the criteria upon which responses are classified.

Another phase of the scoring which has received some attention has been the significance of the Rorschach factors in relation to the specific cards in which they occur. While Rorschach presented each card as having its own unique propensity to elicit certain factors, as W, D, M, or C, this principle has not been systematically established. Empirical evidence has been advanced by Klopfer, *et al.* (173) and Booth (43), and statistical studies have been presented by Beck (15) for the W, and by Hertz and Kennedy (132) for the movement factor. Systematic studies of other factors according to age level would contribute, of course, to the further standardization of the method.

Many investigators have developed and differentiated the original Rorschach factors further and have added new factors. "Z, FY, and Y" have been introduced by Beck (15, 21), "g" by Vernon (299), another "g" by Hertz (132), "v" by Rickers and Klopfer (246), FM and m by Klopfer (174, 175, 179), Piotrowski (228), and Booth (41), M and m by Hertz (120), F (Fb) and F hd, hd F and hd by Binder (30-32, 111), c and K alone or in combination with Form by Klopfer and the New York research groups (165-168, 173-175), Hertz (124), and Schneider (270), B Di (balanced richness of personality) by Meltzer (202), subject and object criticism by Frankel and Benjamin (83), concepts of "sequences," "psychic phases," and "curves of reaction" by Schachtel and Hartoch (265), and the "social personality" by Beck (16, 21).

For the most part, such work has given to the scoring that refinement and objectification so necessary to reliability. Unfortunately, many of the factors introduced have only been empirically established and hence supported by no systematic proof. Many of them, it is true, promise to foreshadow in importance some of the original categories. <sup>V</sup> But many contend, with justification, that while blind diagnosis and clinical hypotheses are helpful in revealing new patterns not previously included in the scoring system, they must be followed by systematic study to establish their true significance, especially before they are included in a scoring system used in clinical diagnosis and research studies (Beck, 20; Hertz, 119, 123, 125). It is to be hoped that in the next few years adequate experimental and systematic clinical proof will be produced defining the new categories clearly, showing them to be psychologically significant, and justifying their inclusion in a valid scoring system.

It must be emphasized, however, that while we have moved toward standardization in the scoring of the method, it has not been a standardization of rigidity. Objective criteria have been employed with caution, few examiners losing sight of the total picture of which the factors are but a part. The scoring still remains a matter of skill—"art" if you will, but the "art" has not been without form and direction.

#### INTERPRETATION

Thus, while standardization has made its way in no uncertain strides both in giving the test and in scoring the answers, the problem of interpreting the scores still eludes the advocates of standardization.

But, even in this direction, efforts have been made. Of course, no rigidly standardized procedure of interpretation has been, or can be, prescribed because of the essential nature of the method. Warnings against such rigidity of procedure have been sounded again and again (Murphy, 176; Kelley, 175; Beck, 13, 14, 16, 19; Klopfer, *et al.*, 171, 173; Hertz, 123; Marseille, 204; Frank, 80). But, while it is generally appreciated that Rorschach patterns for an individual fall into a whole, consistent only for that unique individual, and that the manipulation of these patterns depends not on any standardized scheme but upon the training, skill, and intuitive sense of the interpreter, workers in the field have developed a systematic approach to the procedure and have written on both theory and technique of interpretation.

Innumerable case studies in the literature demonstrate this procedure (Piotrowski, 227, 229, 234; Miale, Clapp, and Kaplan, 205; Wolfson, 307; Tallman and Klopfer, 288; Klopfer and Miale, 178). In addition, the three manuals and various articles contain copious illustrations and recommendations. Oberholzer suggests, for example, starting the interpretation with patterns of affectivity; Monnier, Löpfe, and Hertz prefer to estimate intelligence; Beck, Piotrowski, and Loosli-Usteri choose to examine all unusual patterns first.

Probably the most extensive treatise on the theory and technique of interpretation, however, is that of Klopfer, Burchard, Kelley, and Miale (173). They outline what, in flight from the word "standard," they call "a rational structure in procedure" which includes an analysis of the sequence of each response, a "blind diagnosis" based on the relationship among the patterns and on their "personality Gestalt," and a final analysis in terms of other clinical and test data. Most authorities pursue a similar procedure including an analysis of the frequency, the sequence, and the reciprocal relationships of the Rorschach patterns.

It should be noted that in the interpretation, two things are of interest to the Rorschach examiner: how the individual stands in terms of his group and how he stands in respect to his own potentialities. Two approaches to the Rorschach data, then, are indispensable whatever the procedure of interpretation: the *intraindividual* and the *interindividual*. The former, the intraindividual, concerns itself with the patterning of the traits within the individual, how those traits are integrated among themselves without reference to the individual's group. What, for example is the role of intelligence in the total personality? How is extreme introversiveness balanced by inner living, or by intellectual control? How is the fantasy life balanced by a sense of reality? In a word, what is the intraindividual consistency of that individual?

The second approach, the interindividual, involves a comparison of the individual's response patterns with those of other individuals in his group. Now of interest is the relative strength of the individual's introversiveness in relation to his group, or the extent of his emotional stability, or the degree of mental control. While the first approach receives our greater attention, the second, despite its subordinate importance, must be recognized for what it is—a comparison which, of necessity, resorts to a norm, that *bête noire* of those who view the Rorschach procedure as an art.

Fortunately during the past decade, norms have been amassed for many age groups (21, 25, 70, 71, 72, 86, 87, 105, 115, 138, 162, 170, 190, 191, 192, 200, 201, 216, 258, 269, 287, 298, 299). These are available and summarized up to 1939 by Davidson and Klopfer (61, 62). But there are still striking omissions and marked deficiencies in the material at our disposal (21, 125, 298). For instance, research in the establishment of norms has failed to keep step with our growing needs. Few norms are available for the younger age levels (72, 177, 220). "Experience" directs the interpretations in these age ranges. For the older groups, many norms presented have been based on small samples, without statistical evidence and without defining the groups (Hertz, 125).

In discussing norms, one does not sink to the "deadly level of psychometry" (98). Norms are a necessary part of the Rorschach Method and must be determined for different cultures, for various age groups, age ranges, mental age levels within these ranges, and possibly for developmental levels (Klopfer, *et al.*, 173; Beck, 21; Hertz, 125; Hertz and Baker, 126, 129-131). If no such norms are employed, the interindividual approach in the interpretation can have no scientific pretensions. Yet the use of such norms, to that extent at least, involves a standardization of the technique of interpretation.

On the other hand, it should be noted that the final analysis in the procedure of interpretation in terms of other clinical and test data defies standardization, as Rorschach originally contended. The information gleaned from the Rorschach material is projected against family background, education, training, health history, past life, qualitative judgments of the examiner and of other people, and other clinical and test data. This is then interpreted in terms of the examiner's experiential knowledge of the dynamics of human behavior. Final conclusions are made by inference and analogy depending upon the experience, ingenuity, the fertility of insight, and, not to be forgotten, the common sense of the examiner. Prolonged and extensive experience is necessary, not only with human personality but with all kinds of clinical problems (Klopfer, 171; Beck, 20, 23, 24; Piotrowski, 238; Kelley, 153, 176; Bratt, 47; Hertz, 119, 123). This last step by definition, therefore, is personal to the examiner and subjective in him. It permits of no norms, and it eludes all standardization.

### RELIABILITY

Included in the movement toward standardization have been developments in establishing the reliability and the validity of the method.

Relatively few studies have concerned themselves with reliability. For the most part, many aspects of the problem have been uncritically assumed. Thus, the administration, the scoring system, the application of the method, its reference to special groups, the "skill" of the examiner, and the interpretation of the response record have been assumed to be reliable.

Only two articles show the scoring system to be sufficiently reliable (Hertz, 120; the Sichas, 277). *J. Conig*

Troup (291), using the matching technique proposed by Vernon (302) has demonstrated the reliability of the method as a whole. Another "global" approach, based on a comparison of blind diagnoses of several interpreters, has been demonstrated by Hertz and Rubenstein (133). A statistical technique using the Chi Square Method has been advocated by Fosberg (79) to show the reliability of the Rorschach Method in revealing the permanent personality under varying conditions.

Results obtained from the split-half method are conflicting, though some investigators have obtained fairly satisfactory reliability for several of the Rorschach patterns (Hertz, 113; Troup, 291; Thornton and Guilford, 290). Their procedure has been censured, however, because of the atomistic approach in treating variables independently and isolated from their context. Nevertheless there is some value and consolation in the theory that reliability of the parts is some evidence of the reliability of the whole.

Kerr's (163) use of the retest technique with low results has likewise received adverse criticism for failure to differentiate between those low correlation coefficients caused by actual personality changes in the period between the tests and those related to the unreliability of the method.

It is because of the many difficulties inherent in the method that Piotrowski (232) maintains that reliability and validity are inseparable and that validity, if established, carries with it reliability. While this is true, it must be emphasized that, until a high degree of validity has been established for all age groups and contrasted cultures as well as for abnormal cases, reliability should not be assumed.

Again, validity may be greater than reliability. A high degree of validity may be demonstrated by comparing successive Rorschach interpretations of an individual's record with outside clinical data, as Piotrowski suggests. Yet the reliability of these interpretations when compared with each other may not be high because different aspects of the personality may be emphasized on each occasion. Similarly, the interpretations of the same record by different examiners may exhibit a high degree of validity, yet lower reliability. For example, in the experiment comparing three blind diagnoses of the same Rorschach responses (133), despite the fact that there was considerable agreement among the three interpreters, the depressive features of the personality were emphasized by one, ascendant, excitable, and extroverted characteristics by another, and the conflict in reference to the female role by a third. Checks with clinical data showed all observations to be valid. Thus, Watson (304) fails to appreciate the reliability of the results, misinterpreting the different emphases as discrepancies, overlooking that inner turmoil, depressed feelings, and inferiority may lead to compensatory emphasis on superiority, ambition, dominance, and extroverted interests. Several interpretations of the same record may be valid then, but such validity cannot always imply a similar degree of reliability.

### VALIDITY

In the process of standardization, by far the most important phase has been the determination of the validity of the Rorschach concepts. Throughout the 20 years, workers in the field have devoted themselves to this problem, some few subjecting it to actual experimental technique, others adhering to the traditional correlational procedures. More have resorted to group comparisons employing random groups and paired groups, normal and abnormal cases, and still others have contented themselves with individual case studies. Each has demonstrated to some degree the validity of some phase of the method.

Direct experimentation has contributed little so far, though some small beginnings are in sight. Few experiments have been designed specially to test the validity of the method, although such procedure provides the only effective means of determining why certain Rorschach patterns have definite psychological values. Despite Rorschach's own recommendations that experiments in space-rhythm, form genesis, the M factor as representative of inner

living, and color as index of emotionality be set up, none have as yet been attempted. Experimental procedures such as the use of the Lowenfeld Mosaic Test (Vernon, 299), the sugar tolerance curve based on adrenalin output as an indicator of emotional intensity (Diethelm, 64), the "Dembo situation," the "Luria Method," the pneumograph, and various Gestalt perceptual tests (Varvel, 294) have been suggested and tried out in conjunction with Rorschach results, but no systematic studies have appeared. An interesting finding is reported by Vernon (299), who reports a parallel between introversion as measured by the speed of fluctuation of reversible perspective figures (in line with McDougall's concept) and Rorschach's introversiveness.

Of interest also are the investigations producing artificial changes in normal and abnormal personality by hypnosis (Hakebush, *et al.*, 102; Sarbin, 261; Madow, 194), or by drugs (Kelley, Margulies, and Barrera, 160; Guttman, 100; Varvel, 294; Layman, 186; Robb, Kovitz, and Rapaport, 248; Kelley, Levine, *et al.*, 157, 158), demonstrating alterations in personality in terms of Rorschach patterns.

Again, Copelman and his co-workers (57, 198, 199) have adopted a physiological and neurological approach and sought to validate the Rorschach in the light of the dynamic activity of the brain. Inhibition, excitation, irradiation, and induction which take place upon the surface of the brain show a high correlation, they report, with temperament and constitution.

Some experiments using other materials have also included the Rorschach blots. They serve indirectly to substantiate some Rorschach findings. Thus, Oeser (216) was able to show characteristic differences with tachistoscopic experiments with form-dominant and color-dominant types. Birzele (33) employed pictures as an aid in determining character, with results in agreement with the Rorschach. A study of the Ach-Saharov Test exhibited results which corresponded to those obtained by the Rorschach, according to Hanfmann (104).

Other experimental studies not concerned directly with the Rorschach Method itself have dealt with similar material or similar problems and have contributed indirectly to the validation of some phase of the method. Included are such studies as the relative potency of color and form perception at various ages (Brian and Goodenough, 322), the relation of form and color reactors to intelligence (Engel, 326), color and picture choices of young

children (Hildreth, 328), the Japanese studies on the expressive emotional effects of colors (Tatibana, 342; Imada, 330), the development of the selective regard of color and form (Tobie, 344), the relation of color preferences to age (Rabello, 337), to social adjustment, mental capacities, temperament, and initiative (Thomaseschewski, 343).

Many studies with clinical groups also have verified certain Rorschach results. Of interest here, for example, are the experiments of the perceptions of various demented groups (Ionasiu, Lungu, Iosit, and Cupcea, 142; Ionescu-Sisesti and Copelman, 143; Ionescu-Sisesti, Copelman, and Tumin, 144), and the study of the impairment of "abstract behavior" in schizophrenic patients (Bolles and Goldstein, 321), which furnish results which corroborate Rorschach findings in similar conditions. Mention should likewise be made of experiments with shadow pictures (Rombouts, 250; Wollrab, 308), cloud pictures (Stern, 283, 284), color splotches (Paulsen, 221), and the tautophone employed in the auditory apperceptive test (Shakow and Rosenzweig, 272), which exhibit results comparable to those obtained by the Rorschach.

Orthodox procedure would procure an outside criterion and correlate isolated Rorschach categories or patterns. But this has met with only partial success. Fairly satisfactory correspondence has been reported for some of the so-called intellectual factors and other indices of intelligence (Beck, 12; Hertz, 114; Vernon, 298, 299, 300), and some suggestive correlations have been obtained between scores in paper-and-pencil tests and isolated emotional Rorschach categories (Hertz, 114; Vernon, 298; Vaughn and Krug, 297). Many studies, however, fail to obtain significant correlations (Thornton and Guilford, 290; Kerr, 163).

But, as frequently asserted, low results do not reflect the invalidity of the Rorschach Method. Correlational technique involves abstraction of the Rorschach factors as separate, distinct, and statistical variables, while the Rorschach patterns are conceived as component parts of a larger whole and therefore demand a technique which conserves the integrated whole of the interrelated patterns. The correlational method is obviously inadequate for the Rorschach Method.

Of greater bulk, by far, in the studies of validation is the research based on the comparisons of contrasted groups. Many of the personality pictures for normal adults of varying intelligence

and for mentally disordered cases advanced by Rorschach (as summarized by Bohm (40) in the third edition of the *Psychodiagnostik*) have been confirmed. During the 20 years since Rorschach, age groups of all kinds have been differentiated and various types of personalities analyzed and compared. The groups studied include:

Superior individuals (Beck, 21; Maza, 200).  
Individuals of low intelligence (Pfister, 224; Beck, 21; Dubitscher, 69, 70; Maza, 200; Kubo, 185; Schneider, 269; Ganz and Loosli-Usteri, 86).  
Adolescents of high average intelligence (Hertz, 115).  
Average children (Salas, 258).  
Preschool children (Klopfer and Margulies, 177).  
School beginners (Paulsen, 220).  
Stable and unstable individuals (Hertz, 114; Line and Griffin, 188, 189).  
Ascendant and submissive individuals (Hertz, 114; Vernon, 299).  
Most adjusted and least adjusted girls (Hertz and Wolfson, 112).  
College students (Powell, 243; Varvel, 295, 296).  
Depressed normal adults (Guirdham, 96).  
Coated normal adults (Guirdham, 96; Varvel, 295).  
Stutterers and nonstutterers (Meltzer, 202, 203; Ingebretsen, 141).  
Problem children (Beck, 11, 21).  
Clinic children (Loosli-Usteri, 191; Kerr, 162).  
Delinquents (Endara, 74-76; Kogan, 181; Gozzano, 89; Pescor, 222, 223).

Almost every kind of mental disorder has been subjected to scrutiny and a diversity of problems in each investigated. Characteristic pictures for particular groups have emerged in sharp relief. In this area, the list of studies is impressive:

Schizophrenia (Kretschmer, 183; Guirdham, 96; Bleuler, 37; Schneider, 269; Skalweit, 279; Hackfield, 102; Vaughn and Krug, 297; Dimmick, 65; Rickers-Orsiankina, 246; Beck, 22; Hirning, 134; Hylkema, 140; Costa, 58; Layman, 186).  
Defective and schizophrenic children (Piotrowski, 231).  
Manic-depressive psychosis (Levy and Beck, 187; Beck, 21; Varvel, 295).  
Manics (Beck, 21; Juarros, 149).  
Neuroses (Guirdham, 94; Zulliger, 309, 315, 316; Binder, 30, 31; Beck, 21; Piotrowski, 234; Hackfield, 101; Ross, 254, 255).  
Obsessional neuroses (Bustamente, 54; Piotrowski, 234).  
Depressive states in various mental disorders (Guirdham, 96; Varvel, 295; Beck, 21).  
Melancholics (Guirdham, 97; Juarros, 149).  
Organic psychoses (Oberholzer, 213-215; Piotrowski, 225, 226, 227, 229, 233, 240, 241; Harrower-Erickson, 106, 107; Mahler-Schönburger

and Silberpfennig, 195, 196; Hunt, 136; Schenk, 267; Nadel, 211, 212; Sanders, Schenk, and Van Veen, 259).

Psychopaths (Dubitscher, 69, 70; Binder, 30, 31).

Epilepsy (Eyrich, 77; Guirdham, 95; Stauder, 282; Arluck, 7; Borges, 45; Drohocki, 66, 67).

Parkinsonism (Aubrun, 8; Ionescu-Sisesti and Copelman, 143).

Delirium tremens and alcohol hallucinations (Weber, 305).

Alcoholics (Jastak, 148).

Arthritis (Booth and Klopfer, 44; Booth, 42, 43).

Of especial value are the monographs of Beck (22) and Rickers-Ovsiankina (246), which contain detailed analyses of the psychological structure of the schizophrenic in terms of significant patterns; the studies of Guirdham (96, 97) on depressed structure in the various clinical disorders, with his recommendation for the establishment of differentiating mathematical formulae such as the index of stereotypy (S/E) as a means of objective validation of the Rorschach Method; and Varvel's (295) statistical study of psychotic and neurotic depressions. Of importance are the investigations of the neurotic personality by Levy and Beck (187), Guirdham (94), Binder (30, 31), Piotrowski (234), and Brosin and Fromm (50); the systematized and explicit analysis of the Rorschach patterns in organic and neurological disturbances by Piotrowski (225, 226, 227, 229, 233, 240, 241) and Harrower-Erickson (106, 107); and the monograph on the changes characteristic of congenital epilepsy and epilepsy of an exogenous nature by Stauder (282). And of outstanding interest also is the development of the method as a prognostic instrument in the insulin treatment of schizophrenia by Piotrowski (236, 237, 239). The extensive research in these fields, summarized by Kelley and Klopfer (156) for schizophrenia, Miale and Harrower-Erickson (206) for the neuroses, Piotrowski (233) for the organic disturbances, and Kelley and Barrera (155) for the field in general, has contributed substantially to the validity of the Rorschach Method.

In this connection it should be mentioned also that the approach by group comparison has included evaluation of the Rorschach *Erlebnistypen* with combinations formulated upon other typological systems. But in such studies, systematic and statistical comparisons are not made, and results, even where reported, are not reliable. In addition, the types are not comparable, in that the same total systems, personality levels, or meanings are not present. It has been amply demonstrated, for example, that the *Erlebnistypen* have little in common with Jung's typology (Bailey,

9; Vernon, 299; Guilford, 93; Piotrowski, 232) or with the eidetic types (Bryn, 52). A more recent study by Waals (303) views the relationship between Jung's association method and the Rorschach types as complementary, the former eliciting the "complexes," the latter, the reaction-type, both, however, shedding light on the affectivity.

A vast amount of literature deals with the correspondence between Kretschmer's constitutional types and the Rorschach. Dubitscher (69) corroborates earlier findings of the relationship between the two systems. Skalweit (280) fails to find Rorschach similarities between "schizoid" and schizophrenics, as Kretschmer indicates. Other more recent studies differentiate between cyclothymes and schizothymes in terms of Rorschach patterns (Jacobsen, 145; Jarrin, 147) and between four different blood groups Göbber, 88). While Langner's study (332) with contemporary writers does not employ the Rorschach material directly, it seems to verify previous findings that cyclothymic individuals are predominantly color-minded.

Few of these studies, however, present reliably positive results, especially since the Kretschmer types themselves have not been demonstrated as reliable. They contribute little, therefore, to the scientific validation of the Rorschach Method.

Studies based on the comparative method demonstrate for the most part that the Rorschach Method can differentiate the groups reliably. To that extent, its validity as a diagnostic instrument has been established. Furthermore, to a degree, certain Rorschach patterns appear more reliably in one group than in another. To that degree, those patterns may be said to be associated with the dominant personality patterns of that group and, inferentially, to be reflective of them.

Clinical validation has likewise been presented in terms of case studies. The literature abounds with comparisons of Rorschach interpretations with outside criteria—case records, data from intelligence tests, personality measures, vocational interests, teachers' reports, psychoanalytic records, and other information. The "blind diagnosis" as originally suggested by Rorschach is frequently employed and becomes an invaluable means for demonstrating the validity of the method. Where independent interpretations made without knowledge of the subject other than his age and sex compare favorably with outside clinical and test data, one of the goals of scientific procedure is approached.

The success of blind diagnosis of normal individuals and especially in specific clinical cases is impressive (Kerr, 162; Troup and Klopfer, 292; Sill, 278; Zulliger, 311, 317; Jacobson, 146; Kaplan, Miale, and Clapp, 152). The study of three blind diagnoses by three experienced interpreters in different parts of the country exhibits such high agreement that the method is accepted as having high diagnostic validity (Hertz and Rubenstein, 133).

Illustrative of the role of the individual case study in demonstrating the validity of the Rorschach method are the extensive reports on specific clinical cases as:

A case of compulsion neurosis (Piotrowski, 234).

Anxiety attacks in two children (Ombredane, Suarès, and Canivet, 217).

An epileptic case with psychoneurotic manifestations (Piotrowski and Kelley, 242).

A bilateral lobectomy case, presented in a series of reports on three successive examinations (Tallman and Klopfer, 288; Klopfer and Miale, 178; Klopfer and Tallman, 180).

A case of the analysis of differential diagnosis of the brain (Oberholzer, 213, 214).

A Pick's disease case (Piotrowski, 227).

Personality changes accompanying organic brain lesions in two preadolescent children (Harrower-Erickson and Miale, 109).

Cases before and after operation for brain tumor (Nadel, 211, 212).

Cases of chronic arthritis (Booth and Klopfer, 44).

A case of dementia paralytica before and after malaria treatment (Oppenheimer and Speyer, 218).

Two habitual homicidal criminals (Endara, 74).

Cases in schizophrenia (Hirning, 134; Hylkema, 140; Just, 151).

A defective delinquent (Day, Hartoch, and Schachtel, 63).

Case studies in convulsive states (Kelley and Margulies, 159).

Even more impressive, however, are the results from blind diagnoses of groups of cases. Hunter (139), for example, compares the interpretations of 50 pupils with various intelligence and personality estimates with a high degree of success. Especially the study of Benjamin and Ebaugh (27) of 50 patients, which compares the Rorschach diagnoses with both preliminary clinical and final clinical diagnoses, and which shows remarkable agreement—85% complete agreement and 98% agreement in major diagnoses—testifies eloquently to its diagnostic value. Even in the few instances reported, where the method was not sufficiently reliable to make accurate diagnoses, it is admitted that qualitative analysis of the records contributed to the understanding of the disorder (Cardona, 55).

Mention also should be made here of the psychoanalytic validation of Rorschach interpretations. Many of the concepts, like the form, movement, and shading categories, have been substantiated in part by psychoanalytic data (Furrer, 84, 85; Bustamente, 54; Shuey, 275; Binder, 30; Schachtel, 263). Rorschach himself employed the independent psychoanalysis of one of his cases by Oberholzer (252) to validate various aspects of his interpretation. Many examiners have followed Rorschach in this procedure, checking their interpretations with dynamic characterizations based on psychoanalysis (Varvel, 294; Binder, 30, 31; Hertz and Rubenstein, 133).

Graphology likewise has served to validate the Rorschach Method, many of the studies showing a high degree of correspondence between graphological analyses and Rorschach interpretations (Vernon, 298; Diethelm, 64; Biäsch, 28; Hartoch and Schachtel, 110; Benjamin and Ebaugh, 27; Stein-Lewison, 44; Droepe, 68). The possibilities in using both procedures have been described by Diethelm (64), Booth (43), and Schade (266).

Another form of blind diagnosis has been advanced by Vernon (302) in his *method of correct matching*, in which Rorschach interpretations are matched with sketches independently prepared from other data. The method is unique, since it permits expression of quantitative relationships based upon qualitative judgments of the personality as a whole. Vernon (300) was able to report a correlation of  $.78 \pm .06$  between the clinician's ability to estimate the intelligence of 20 subjects and responses on the Rorschach. Again, Vernon (299) reports success among judges in matching the Rorschach interpretations of the personality of 45 subjects with personality sketches independently prepared, a degree of success represented by a contingency correlation coefficient of  $.833 \pm .032$ . Because of such validation, Vernon concludes that the application of the method from the clinical viewpoint is scientifically justifiable.

Troup (291) employed this method to determine the degree of similarity in the personality make-up of 20 pairs of identical twins. Satisfactory success is likewise reported by Patterson and Magaw (219), who demonstrate the validity of the method in its application to mentally defective problem children. Both Troup and Vernon, however, admit that the matching method has definite limitations in its application to material as complex as the Rorschach data, and Benjamin and Ebaugh (27) show that it is defi-

nately unsuited to Rorschach material, preferring the orthodox procedure of blind diagnosis.

Clinical validation obviously has yielded the most significant results. There can be little doubt that comparative clinical studies in the last decade, especially, have presented empirical proof at least of the value of the Rorschach Method as a clinical instrument of diagnosis and prognosis, and thus argue for its potentialities as an instrument of psychiatric research.

As a result of these validating studies, widespread acceptance and extensive application of the method in fields of psychology, psychiatry, psychoanalysis, pedagogy, anthropology, delinquency, and social service (Miale, 204; Barry and Sender, 10) have followed. Such application has in turn served as a "working" validation of the method.

In the field of child guidance, in the last decade especially, the method has been used to study intelligence, special abilities, personality development, school adjustment, personality problems (Paulsen, 220; Hoel, 135; Hunter, 139; Zulliger, 310, 312-314; Loosli-Usteri, 191). It has been applied to problems of heredity to demonstrate family similarities, twin similarity, and to determine the relative influence of heredity and environment on personality (Bleuler, 35, 36; Kerr, 163; Brander, 46; Troup, 291; Saudek, 262; Marinesco, Kreindler, and Copelman, 198). It has been applied to different culture groups (Bleuler, 39; Hallowell, 103; Hunter, 138), to the study of the constancy of personality traits (Loosli-Usteri, 191; Suarès, 285, 286), and to the study of the adolescent personality (Shapiro-Pollak, 273, 274; Hertz, 126, 129; Hertz and Baker, 130, 131). Its use in the fields of education, college guidance, and vocational guidance is ever increasing (Roemer 249; Schneider, 268, 269; Brendgen, 49; Zulliger, 310, 313, 314; Munroe, 209).

It has been put to service in mental hygiene and child guidance clinics to analyze personality difficulties, to study fears and anxieties, and to judge the effectiveness of psychotherapy; in counseling and advising services of colleges, in court work (Dunn, 10), in the study of delinquents (Kogan, 181; Zulliger, 317; Day, Hartoch, and Schachtel, 63), and in social service work (Krafft, 182).

Its greatest application has been, of course, in the psychiatric field (Aguiar, 1, 2; MacCalman, 193; Kelley and Barrera, 155) to give an insight into psychological difficulties; to aid in difficult differential diagnosis (Guirdham, 96; Piotrowski and Kelley, 242;

Booth, 43; Piotrowski, 240, 241); to study personality following cerebral lesions, under the influence of drugs or hypnosis (Layman, 186; Robb, Kovitz, Rapaport, 248; Brown and Orbison, 51); to determine choice of psychotherapeutic approach; to gauge the effectiveness of therapy; and for prediction (Piotrowski, 236, 237, 239; Graham, 91; Rymer, Benjamin, and Ebaugh, 256).

Its potentialities as an instrument to diagnose stable and unstable personalities in soldiers has recently been discussed by Harrower-Erickson (108) as an aid for the evaluation of aptitude for flight training by Bigelow (29).

In all this work, while interest has been primarily directed to specific problems of diagnosis, guidance, or prognosis, this application has served also to determine the validity and usefulness of the method itself.

#### EVALUATION

Results such as these reflect creative research and arduous labor—research characterized by the gradual standardization of the procedure, by efforts to supplement qualitative analysis with scoring criteria and norms, by more critical manipulation of data, by increasingly critical attitudes, by an insistence upon more controlled investigations, and by greater and more extensive application. But despite its impressiveness, much remains fragmentary. Many of the results have been challenged, and the validity of the method has yet to win complete scientific acceptance.

There is good reason, however, why the validity of the method has been subjected to challenge. It is because of the uniqueness of the Rorschach Method that our results have been inadequate in so many cases. The method is essentially qualitative, and the processes of standardization and validation demand procedures which are appropriate to qualitative concepts *susceptible?*

Many reject the traditional experimental studies because, they claim, the abortive dissection of the psychogram in the search for static factors in isolation has distorted the method. The statistical procedures have been censured because of their emphasis on quantitative measurements, hypothetical averages, uniformities, and generalities, at the expense of understanding the individual himself.

While it is true that some parts of the Rorschach Method defy measurement, statistical treatment is imperative in certain phases of the research. It must be kept in mind that statistics is merely a tool for describing, analyzing, and summarizing data. One cannot

object to its use where data must be treated in this way. There is no right or wrong to the use of statistics with the Rorschach Method. It should not be at the service of the experimentalist exclusively because he is more interested in mass data, uniformities, and generalities. Nor should it be avoided by the clinician because he is primarily interested in individual diagnosis. As a matter of fact, it has been demonstrated that the structure of a single personality may be made subject to statistical analysis (Allport, 318; Lewin, 334; Baldwin, 320).

Statistical treatment should be employed where necessary, and other techniques applied where they are better suited to the problem. Application of the statistical method to Rorschach data, however, does not *per se* render the whole method quantitative, mechanical, or sterile. On the contrary, it insures accuracy and reliability of quantitative results.

Thus, statistical methods have a definite place in research with Rorschach data. Orthodox procedures which have been extensively used with success in psychological problems should not be avoided where they are applicable. Measures of central tendency, of dispersion, of reliability, and of validity should be obtained where possible. Other statistical devices, perhaps more applicable to the data, might be used. Criteria for scoring the Rorschach categories, determination of norms, age and sex differences must be based upon some statistical foundations. Comparative studies, many of which have been presented by clinicians, are quantitative studies, and results reported without recourse to statistics are of doubtful value (25, 172). Statistics must be employed to establish the reliability of these findings if they are to be accepted as factual data.

But the value of statistical treatment is no justification for overemphasis. There can be no doubt that conclusions concerning the internal organization of the traits of an individual, concerning his "private worlds" in Frank's terminology (82), cannot be based on means, medians, sigmas, or percentiles. Statistics can never supplant the insight of the clinician.

Hence, the method of clinical validation has tended to monopolize attention in determining the validity of the Rorschach Method. But many object to exclusive reliance on this type of validation in its present stage of development.

The chief objection to clinical validation is its lack of scientific procedure. Most clinical studies are characterized by few cases, inadequate controls, failure to describe the techniques employed,

and failure to standardize the research procedure. Case studies all too frequently include highly subjective diagnoses and dogmatic assertions.

Too often the experience of the clinician determines the scoring, the interpretation of the record, and the validity of that interpretation. The fact that one is expert and holds certain interpretations valid by virtue of experience is no proof of their validity. We may admire the expert, we may be trained and guided by him, but we must not forget that his intuitive deductions are not scientific formulations. In my opinion, no matter how expert a "Rorschacher" is, he will be eager to rationalize his intuitions through the scientific method.

Case studies have their place. They are essential for preliminary exploration. Their findings are inconclusive, however, and await further research. I do not mean to imply that findings from clinical studies should not be reported because they do not meet scientific requirements, but I do insist that we should recognize their results for what they are—that is, promising hypotheses which call for further study under carefully controlled conditions.

Clinical validation should not be outside the bounds of scientific procedure. Only that which is valid in the Rorschach Method should be accepted, and that which is valid depends upon critical and proven analysis.

Thus, for example, the application of the Rorschach should not be limited to the abnormal, and while the abnormal may help to explain the normal, the latter is not without its own power to shed light.

Again, indiscriminate application of the Rorschach patterns in their present state of validation is hazardous. They are neither equally adequate nor equally valid at all age levels or in different culture groups. The method, for example, is now applied to children at the lower age levels. Yet the validity of the patterns in terms of these younger age groups has never been established. Thus, meanings validated only on the basis of clinical data and reactions of adults are used to interpret the reactions of the child. Adult reactions may not be valid criteria for children's reactions. Certainly we have no right to assume that patterns validated on psychiatric material apply likewise to children. On the contrary, we recognize many patterns in young children which have been identified with pathology in adults.

Validation of Rorschach concepts must be established system-

atically and scientifically at all age levels and for contrasted cultures. But it should be emphasized that this does not mean exclusive reliance on traditional statistical procedure.

Those of us who are experimentalists must shake off the shackles of traditional procedure and explore new fields. Those of us who are clinicians must forsake, however unwillingly, the allurements of blind diagnoses and explore the less spectacular realm of scientific research.

Our problem is twofold: to develop a method for further standardization and validation, more in tune with our qualitative instrument, and to determine criteria of evaluation of its validity.

It is consoling to realize that our problem is not unique, that it is the problem of all qualitative methods for the study of the individual (319). We must go into other fields of personality and utilize and synthesize the research there. We must pioneer with all students of personality in elaborating old techniques to make them more applicable to qualitative procedure. We must forge new techniques which will place the method on firm scientific foundations without sacrificing values of qualitative analysis.

We must explore methods which have already yielded promising results. Vernon's matching method, for example, may be further developed, since it permits quantitative relationships to be based on qualitative judgments of the personality viewed as an integral whole. The blind diagnosis technique may be expanded to *multiple blind diagnoses* where many interpreters work independently on the same Rorschach material and clinical data, along the lines already suggested by Rosenzweig (253) and Hertz and Rubenstein (133). If agreement can be obtained among several interpreters statistically based on a number of cases, the reliability and validity of the method will meet scientific requirements.

Case studies also may be developed in the manner advocated by Allport (318) to earn a place in the scientific validation of the Rorschach Method. If each case were to include scientific controls, systematic recording of data, measures of reliability, and the like, it might serve to validate Rorschach results.

Experimental projects should be set up including experimental and clinical techniques such as the program described by Murray (210) at the Harvard Psychological Clinic. Various methods were employed: tests, interviews, projective techniques including the Rorschach Method, and direct experimentation. In such projects, one technique serves as a check upon the other.

In determining outside criteria, direct sampling of the personality or behavior with procedures which precipitate the behavior process is most promising. Better use should be made of partially controlled situations for eliciting personal data, in line with Olson's method of time sampling (336) or with methods described by Lewin (334). Much progress has already been made by "topologists" in testing out their concepts of resumption of interrupted activities, degrees of reality, level of aspiration, reward and punishment, and the like, and they have contributed promising methods and results for the quantitative analysis of some problems of human motivation (Brown and Lewin, 324; Brown, 323).

Other projective techniques, such as those described by Frank (81, 82), may be developed (Kerr, 331; Rotter, 338). If and when such projective techniques meet with scientific acceptance, they should invite our serious attention, for they may shed light upon the path we follow.

Today, crucial psychoanalytic concepts such as fantasies, wishful thinking, projections, and repressions are being studied under controlled laboratory conditions (Murray, *et al.*, 335). Those psychoanalytic concepts which earn scientific acceptance may be enlisted in our service.

But, most of all, new procedures must be invoked which will emphasize the uniqueness of the individual and make even group uniformities meaningful. It would seem that the first step should be a systematic determination of those Rorschach patterns which are psychologically significant.

Experiments set up on the genesis of form, movement, or color in various age groups would establish tendencies for each age level, somewhat in the order of Dworetzki's study (73) of the evolution of perception in children 3 to 15 years of age on the basis of Rorschach ink-bLOTS and ambiguous designs. Norms established in this way, based on functional concepts, would be psychologically meaningful. Extending this procedure to the abnormal, to the feeble-minded, for example, would serve to establish not only quantitative, but qualitative, differences in the characteristic patterns attained.

Best of all, concentration on *one individual* in the tradition of the clinician, as Allport recommends (318), would be scientifically productive. Experimentation with one individual would determine basic traits in that individual which are characteristically revealed by him under a diversity of circumstances, or in specific situations, or in partially controlled situations, whatever method

were adopted. A child, for example, could be placed in many and varied situations which call for ascendant behavior, or imaginative activity, or emotional excitability, and his reactions systematically observed and recorded. Characteristic personality traits can be established for him, and generalization can be made as to his dominant personality traits, their range, and even their intensity. Using these results as criteria, Rorschach patterns might be identified as psychologically meaningful in terms of the individual. A representative sampling of these patterns might be developed for the individual, and a configuration of patterns built up for him.

Such meaningful Rorschach patterns developed in one individual might likewise be developed in many individuals. If we could prosecute such individual study systematically in many individuals, patterns might be compared, generalizations extended to the group, and meaningful norms constructed.

Longitudinal studies following children through periods of time would be fertile ground for further standardization and validation of the method. They would give us a picture of the developing individual in terms of Rorschach patterns, and the sequences of patterns which characteristically emerge in serial order might be established. Here we would have group norms in dynamic terms. Even psychological principles might be established as to the emergence, the growth, the maturing of personality patterns, and other significant developmental changes in personality.

This procedure would serve to standardize the Rorschach Method as uniquely it demands standardization, emphasizing the "unique idiomatic character of the personality," yet retaining interest in generalizations and uniformities. And this procedure could be prosecuted with a quantitative precision and a scientific objectivity which would satisfy the traditional experimentalist.

All these suggestions and more offer challenging opportunities for future research.

In conclusion, it can be said that much has been accomplished in the last 20 years. It has been a productive, creative, and pioneering period in our history, but much more remains to be done. Research in the true sense of the term has just begun.

Our immediate obligation is to continue the process of standardization in form and character that will best serve our method. It is our function to organize coöordinated research projects, to make a concerted drive on the same problems at the same time, to

infuse with meaning the empirical facts which we have amassed, and thus to add scientific results to our store of knowledge.

To occupy ourselves with ink-blots, even though we pursue the minutiae of scientific investigation at a time when civilization is subjected to the *Blitz-krieg*, appears ironical. But it is an irony that loses its bitterness if we can come to believe that by our labors we are forging the instrumentalities whereby the world may yet achieve sanity.

Today, if ever, we must bring all our energy, insight, research, and leadership to bear upon our joint task—to maintain mental health and efficiency in the midst of chaos and despair, to restore and revive mental balance in an imbalanced world, to help fashion, if not for ourselves, for our children at least, a society more worthy of human life and human dignity.

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*Articles Which Do Not Refer Specifically to the Rorschach Method*

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PROCEEDINGS OF THE THIRTY-SEVENTH ANNUAL  
MEETING OF THE SOUTHERN SOCIETY FOR  
PHILOSOPHY AND PSYCHOLOGY

NORMAN L. MUNN, SECRETARY, VANDERBILT UNIVERSITY

The Thirty-seventh Annual Meeting convened in Nashville, Tennessee, April 2 to 4, 1942 with Vanderbilt University and Peabody College as host institutions. All meetings were held in the Maxwell House Hotel. A local committee under the chairmanship of Paul Boynton and consisting of Eugene Bugg, Meredith P. Crawford, Joe E. Moore, and Franklin C. Paschal, made local arrangements for the meeting.

The Council of the Society met in executive session on Thursday at 8:00 P.M., with Fritz Marti presiding. Other council members present were Wayne Dennis, B. von Haller Gilmer, C. P. Heinlein, Harold N. Lee, John Paul Nafe, Herbert C. Sanborn, William P. Warren, and the Secretary.

There were two philosophy and three psychology sessions on Friday. A joint session on philosophy and psychology was held Saturday morning. Twelve philosophy and twenty-one psychology papers were presented during these sessions. Chairmen for the philosophy sections were Axell Brett and Eugene Bugg. The psychology sessions were presided over by Joseph E. Moore, Emily S. Dexter, and John Paul Nafe. Fritz Marti presided at the joint session.

At 4:30 P.M. on Friday, the members of the society and their friends were complimented at a tea given by Vanderbilt University and Peabody College in the Social Religious Building at Peabody College.

The annual banquet was held Friday at 7:00 P.M. in the Maxwell House Ballroom with an attendance of eighty. After the banquet an address of welcome was delivered by President S. C. Garrison of Peabody College. This was followed by President Fritz Marti's paper on "The College, Religion, and Philosophy."

The annual business meeting convened at 12:30 P.M. on Saturday with President Fritz Marti in the chair.

MINUTES OF THE ANNUAL BUSINESS MEETING

The minutes of the Thirty-sixth Annual Business Meeting of the Society were approved as published in the *Psychological Bulletin*, 1941, Vol. 38, No. 8, pp. 683-703.

The report of the Secretary, which related duties performed during the year, was approved as read. It was reported that one member, Harry M. Capps, died during the year. Two members resigned and five were dropped for nonpayment of dues. Members at the time of the meeting numbered 279, twelve more than at the Washington meeting.

Dr. Albert G. A. Balz, chairman of the Standing Committee on Philosophy, reported concerning the present status of his compilation of the biographies and bibliographies of philosophers who have taught or who are at present teaching in the southern region. Appreciation of Dr. Balz's work was expressed.

On the Council's recommendation, fourteen new members were admitted to the Society. These are: James Anderson, Xavier University; Joseph B. Bassich, Loyola University; Charles W. Burts, Furman University; Frank W. Finger, University of Virginia; Susan W. Gray, Florida State College for Women; Lillian M. Johnson, Western Kentucky Teachers College; Jean M. MacDonald, Florida State College for Women; Frederick E. Nolting, Jr., University of Virginia; Laurence J. O'Rourke, U. S. Civil Service Commission; Joseph J. Ray, Peabody College; Kenyon R. Runner, Armored Force Replacement Training Center, Fort Knox; Harry G. Schrickel, Carnegie Institute of Technology; Mack B. Stokes, Emory University; Frank C. Wegener, University of Virginia.

On recommendation of the Council the following officers were elected: President, Christian Paul Heinlein of Florida State College for Women; Secretary-Treasurer, Wayne Dennis of the Louisiana State University; Council, Elizabeth Duffy of the Woman's College of the University of North Carolina; Peter A. Carmichael of the Louisiana State University, and S. Rains Wallace, Jr., of Tulane University.

A recommendation of the Council to hold the next meeting in Chattanooga was approved subject to further investigation concerning accommodations and transportation facilities. The Council was authorized to move the location of the meeting if conditions appeared to warrant such a change. The meeting was then adjourned.

## PROGRAM

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Friday Morning Session, April 3.

### PSYCHOLOGY

#### Section I

**JOSEPH E. MOORE, Chairman**

*Group Rational Learning Test Through Direct Positive Panchromatic Films.* HENRY F. DICKENSON, Lincoln Memorial University.

This test of Group Rational Learning demonstrates the practicability of the screen version over the original (oral) group rational learning tests. It was administered to over two thousand subjects of high school and

college ages. Uniform presentation and timing of items through pictures perceptibly increased the reliability and validity of the test.

The actual test requires two hours, with a slight rest period in the middle. Provision is inherent in the test for greater objectivity than is usually afforded by the group test. Two equivalent halves serve the same purpose, as two forms if shorter tests are desired. High scores on the test are closely associated with attention, recall, inductive-deductive reasoning, scholastic ability, persistence, mental multiplication, performance ability, and such requisites of general success.

*The Relationship Between Self-Estimated and Measured Interests.* D. J. MOFFIE, North Carolina State College.

The vocational guidance counselor is often required, by sheer necessity, to ask his patient the direct question, "Are you interested in law, medicine, engineering, teaching, or some other specific occupation?" It was the purpose of this investigation to determine the value of the above statement. A questionnaire, on which were given the main groups and occupations as reported by the Strong Interest Blank, was administered to eighty N.Y.A. students. Each student was asked to rate his interests for the groups and specific occupations. Pearson coefficients were obtained between estimated ratings and the scores on the Strong Interest Blank. Coefficients ranged from -.07 to +.47 for groups I, II, V, VIII, IX, and X. Correlations on twenty other specific occupations, selected at random, are also to be reported.

Tentative results appear to indicate that very little value can be placed on the self-estimated interests of an individual. Predictions, therefore, based entirely on the estimated interests in these occupations cannot be used to determine interests as measured by the Strong Interest Blank.

*The Prediction of Differential Achievement in a Technological College.* WILLIAM McGEHEE, North Carolina State College.

This study attempts to determine the value of the American Council Psychological Examination, the Cooperative English Test (Form OM), and the Cooperative Mathematics Test (Form P) in predicting academic achievement in a technological college and in the various major curricula of the college. Scores on the three specified tests made by 700 freshmen admitted at the beginning of the 1939-40 school year are studied in relationship to grades made by these enrollees during the academic year of 1939-40. Zero order correlation coefficients of each of the tests with the grades are of about the same magnitude when the scores and grades of the group are studied, regardless of curricula enrollment. However, the tests vary in their prognostic value for the various curricula; in general, all three tests have the least predictive value in regard to the achievement of students enrolled in agriculture and textile curricula. Multiple correlational analysis does not indicate significant difference in the predictive value of the three tests. Negative results are secured when the academic achievement of the students ranking at different levels on the tests are studied against the students' grades. Implications of the data in regard to testing programs in technological schools are presented.

*The Place of Repetitive Practice in One Kind of Meaningful Learning.*  
WILLIAM A. BROWNELL, Duke University.

The subjects of this investigation were 63 third-grade children. In grades 1 and 2 they had been taught the 100 simple addition facts and the corresponding 100 subtraction facts. The method of instruction was that of drill,—number stimuli, such as  $6 + 4$ , were regularly presented orally or in writing in a way which encouraged immediate responses of the answers alone, without reflective thought or any form of solution.

Two series of tests were given at intervals of a month: (1) written group tests on the 100 addition facts (Tests I, II, and III) and (2) individual oral tests (Interviews A, B, and C). Test I and Interview A were administered one month after the start of the fall term. During the next month five minutes a day were taken from the arithmetic period for further drill on the addition facts. Test II and Interview B followed. During the next four weeks there was no special drill on the addition facts beyond their use in the computations of daily lessons. Then came Test III and Interview C.

The results of the group tests agreed with the results of several other similar investigations: efficiency, as measured by rate and accuracy of response, improved considerably between Test I and Test II, and slightly between Test II and Test III. The interview data were unique: such data have not before been reported in investigations of the effects of drill. These data revealed (1) the reason for the improvement in efficiency and (2) the limitations of repetitive practice. The implications of the findings for educational practice and for psychological theory and research relating to meaningful learning are discussed.

*On the Weighting of Broad Categories.* F. C. PASCHAL, Vanderbilt University.

When data are cast into the form of a few broad categories, as in a rating scale, quantification is frequently desired for statistical purposes. Such quantification must be soundly based if the resulting statistics are to be meaningful. One type is that in which an underlying continuous variate may be assumed, whose distribution conforms to the normal distribution curve. Kelley has offered a technique whereby each category is weighted in terms of the mean deviation of a truncated segment of the surface of the curve. A simplified procedure is proposed, utilizing the median deviation in its stead, the mid-percentile of each category being converted into standard deviation units. These weights may be turned into the Kelley weights, if so desired, by the addition of certain empirically determined constants which, by way of illustration, are .11, .03, .01, .03, and .11 sigma for five categories or .11, .01, and .11 for three categories. The resulting deviation from the Kelley figures is at no time greater than .02 sigma.

This argument is particularly applicable to the treatment of college marks where the grade distribution is known. The assumption that the distribution of college marks meets the conditions stated above seems a better assumption than the usual one, which is that grades constitute the

grouping by intervals of measures having equal baseline units. No standard deviation can be derived since it has an assigned value of unity.

*General Rules for Predicting the Selectivity of a Test When the Standardizing Population and the Parent Population are not Necessarily Homogeneous.* H. M. JOHNSON, Tulane University.

The rules to be discussed are general but are here illustrated in the procedure which employs critical scores or non-quantitative criteria in test and trait. Such procedures give rise to  $2 \times 2$  contingency tables, yielding Pearsonian  $r = \Delta/N \sqrt{p_1 q_1 p_2 q_2}$ , in which  $p_1, p_2$  is the probability of attaining the criterion set for test and trait respectively, and  $\Delta = (AB) - Np_1q_1$ . The selective power of the test is measured by  $\Gamma/N = 2\Delta/N$ —i.e., by the relative number of individuals improperly classified by chance but properly reclassified by the test. Thus if  $p_1, p_2$  are given,  $\Gamma/N$  is proportional to  $r$ . However, for perfect correlation, the maximum selectivity  $\Gamma/N = 0.5$ , which requires  $p_1 = q_1 = p_2$ . If  $r$  is given, and if also—as it often happens— $p_2$  is fixed by external limitations, then the selectivity of the test is proportional to  $\sqrt{p_1 q_1}$ , and declines rapidly as their factor deviates from 0.5. Although these relationships are obvious from analysis of the definition of  $r$  given above, they are often overlooked, so that a test may seem to be quite effective when in fact most or nearly all the individuals are properly classified by chance. The facts also tell us what changes in selectivity to expect if a test which has been standardized on a sample population is transferred to a parent population which is not homogeneous with the standardizing sample.

## Section II

EMILY S. DEXTER, Chairman

*Factors Affecting Skin Color Judgments of Negro College Students.* ELI S. MARKS, Fisk University.

Two groups of students at Fisk University were asked to rate each other for skin color and attractiveness. Each judge also indicated how well he or she knew each person rated. For most judges, the ratings of skin color showed a correlation with those for attractiveness. In general, subjects rated as light in color were also rated as attractive, while subjects rated as dark in color were considered unattractive. The skin color of the judge (in terms of the average rating of all raters) also appears to be correlated with his or her rating of other persons. The darker judges assign lighter values when rating an individual than do the lighter judges. The amount of "displacement" in rating attributable to the judge's skin color varies with the color of the subject rated, the greatest "displacement" appearing for subjects in the middle skin color range. The evidence would indicate that: (1) the reference scale used in rating skin color is in part a function of the relative colors of the judge and the subject rated; (2) there is a preference for persons of lighter colors but not for extremely light individuals; (3) there is a tendency to displace the rating of liked individuals in the direction of the preferred skin color.

*Some Personality Adjustments of Negro College Students as Indicated by Tests and Ratings.* LILY BRUNSWIG, Fisk University.

Personality tests, including the Bell Adjustment Inventory, the two forms of the Minnesota Inventory of Social Attitudes, and the Pessimism: Optimism Scale of Chant and Myers were administered to 87 Fisk University students. Each of the students tested was asked to rate himself and as many of the other subjects as he knew on a rating scale containing measures of 11 behavior tendencies. Scores in the areas of Happiness, Sociability, and Dominance respectively were obtained from the rating scales.

Intercorrelations among the tests and among the tests and ratings suggest the applicability of some of these paper and pencil measuring instruments as one approach to the study of personality adjustments in a population differing somewhat socially and geographically from the populations employed for the development of the tests. Additional insight into the validity of the measures employed is furnished by personal interviews and observation of subjects, as well as by the nature of the rating supplied by each subject.

*Behavioral Patterns of Young Children in an Insecure Situation.* JEAN M. MACDONALD, Florida State College for Women.

The paper reports patterns of insecure behavior observed in the reactions of young children to a strange environment. Sixteen children, ranging in age from 11.2 to 21.4 months, were left alone in a strange room for 5 minute intervals on alternate days (A-group). Eight children, representing a comparable age-range, were left in the room with their mothers or "substitute mothers," i.e., attendants in the institutional nursery where the children lived (M-group). The total number of observational periods ranged from 5 to 11 in each group.

In addition to a latency-reaction, 6 primary patterns of behavior were observed, viz., patterns of non-motile withdrawal, agitated movement, retreat, attack, encapsulation and approach. Assuming that security is denoted by a particular relationship of the children to the situation, namely, by ability to respond to it in a positively adaptive rather than a negatively adaptive or emotional manner, 5 of the patterns are indicative of insecurity. Security increased as the strange situation became familiar and was evidenced initially when the mother was present. A field interpretation of the insecure situation is offered.

*Performance of Hopi Indian Children on the Draw-a-man Test.* WAYNE DENNIS, Louisiana State University.

Almost without exception it has been found that American Indians test below white norms on psychological tests. The poorer performance of Indians can be explained in terms of cultural handicaps. This is true even of those Indians groups which have been given non-language tests, since the performance required by non-language tests are often as unfamiliar to the Indian child as is the English language.

Among the Pueblo Indians of Arizona and New Mexico, however, graphic and plastic arts have been employed for centuries. The Pueblo child is acquainted with drawings on pottery and on ceremonial objects

and he engages in making pencil and crayon drawings at the government schools. In Goodenough's Draw-a-man Test, Pueblo children should have no environmental disadvantages.

With the cooperation of the government schools the test was given to all children of two Hopi mesas between the ages of 6 and 11 years, a total of 153 subjects. The average IQ of this group was 107. There is obviously no evidence of inferiority. It is suggested, however, that different Indian groups may differ markedly in ability.

*The Relation of Individual Variability to Intelligence.* SUSAN W. GRAY,  
Florida State College for Women.

This study endeavors to reveal what relationship, if any, exists between individual variability in educational achievement and intelligence.

Subjects in this investigation were three groups of 200 children each, one group designated as of high intelligence upon the Kuhlmann-Anderson Tests, one of average intelligence, and one of low intelligence. For each child a measure of individual variability was found in the following manner: The scores of each child upon six subtests of the Unit Scales of Attainment were converted into standard scores based upon the child's deviation in sigma-units from the mean of his own class group. The sum of all possible differences with respect to these six scores was then found.

The relationship between individual variability and intelligence was studied by means of comparing measures of central tendency and dispersion for the individual variability scores of the three groups. With this technique a slight, but statistically significant, tendency was observed for the low group to show a greater average individual variability and also a greater dispersion of individual variability scores within the group. Differences between the high and average groups, however, were negligible.

*The Personnel Testing Program of the Tennessee Valley Authority.* R. E.  
DUNFORD, L. L. GRIFFEN, and SYDNEY ADAMS, University of Tennessee  
and the Tennessee Valley Authority.

The Tennessee Valley Authority is rapidly expanding its personnel testing program to include many of the annually rated positions in the clerical, administrative and fiscal, sub-professional and custodial series. In addition, tests are being used in the recruitment of candidates for apprentices in certain skilled trades and for an increasing number of annually rated positions in the trades and labor series.

The application of tests to the problems of recruitment and selection in the fields named has largely taken place in the last year and one-half. At present the tests have generally been used as selective or eligibility standards for beginning positions with entrance salaries at or below \$1440 per annum. It is planned to extend the use of tests where feasible to higher salary grades, probably not in excess of \$2300.

The tests used are designed to measure potentiality for development rather than achievement or knowledge about a specific kind of work. They are intended to measure general intelligence and interest in certain types of work as indicated by information. Test results are used to supplement existent techniques for application rating and selection of employees.

## PHILOSOPHY

AXELL BRETT, Chairman

*Some Implications between Religion and Democratic Equality.* KENNETH K. BERRY, Webber College.

This paper takes the position that the democratic dogma "all men are created equal" is fundamentally religious. (It may also be scientifically demonstrable; but, even if it is, that is of less consequence in moving human wills to action.)

From this it follows that, if democratic equality is to be understood and intelligently fostered, we moderns must build a creed which avoids equal and opposite errors: on the one hand, complete separation of the transcendent and the immediate; on the other, their too easy identification. For, as Niebur has shown, the former leads to futility and the latter to complacency.

But this in turn will involve a reexamination of the meaning of freedom and of the end of man's existence.

*The Postulate of an Impoverished Reality.* IREDELL JENKINS, Tulane University.

It is the thesis of this paper that all distinctively modern thought, and so a large part of the complex structure of contemporary theory and practice, is based upon a single postulate. Hence, a great number of present day opinions, ideas, and attitudes have been derived from and depend upon this postulate. The contention here advanced is that this basic assumption consists in the postulate that reality and nature are poorer, more bare, than our experience of them. This assumption, which arose with Descartes and Bacon, states that nature can be explained entirely in terms of matter and motion; that these alone are real, and that all secondary and tertiary qualities, all values, ideals, and standards, are but constructions of the mind. The paper seeks to describe the historical origin of this postulate and to trace its growth, to analyze in detail just what it asserts and what it denies about nature, and to exhibit the subsidiary modes of thought that arise from this basic assumption. And, finally, it seeks to establish that many present confusions and uncertainties stem from this view, and that this postulate is obviously inadequate as a description of reality, and needs to be corrected.

*The Use and Abuse of Words.* HAROLD N. LEE, Tulane University.

We may take words too seriously because we do not recognize that they are only symbols. We may also take words too seriously because we emphasize too strongly their symbolic nature. In either case we are victimized. The evil effects of an over emphasis on semantics arise from directing our attention so closely to the symbolic nature that we neglect what is symbolized.

We can think of objects not physically present only by means of mental images or of symbols. Mental images are useless for the purpose of communication. Words supply an inexhaustible store of symbols that

we can have always available and upon which we can draw at will for purposes of thought or communication. A further difficulty of thought arises when we consider entities that have no separate physical existence. Without symbols, these could not be objects of thought at all. Most of the words in an extended vocabulary are symbols of such nonphysical realities. Without them, thought on any level of abstraction or generalization would be impossible.

But the fact that symbols are essential to thought and to philosophy gives us no reason to suppose that philosophy is the art of using symbols, as Carnap sometimes seems to suggest. Nor does it justify the view that the application of thought to action in such fields as politics is the art of the successful manipulation of symbols, as Stuart Chase and Thurman Arnold seem to imply. Such views are essentially anti-rational, anti-intellectual and anti-scientific.

*Dewey's Substitute For "Natural Law."* ROBERT W. BROWNING, University of North Carolina.

"Natural law" is here used in its moral connotation. Dewey's theory of valuation is considered as an illustration of the attempt by scientific procedures to provide determinations of what should be done. Though a positivist in the generic sense, Dewey is to be distinguished from most of contemporary positivism, both in theory of science and in approach to problems of value. For present purposes, his naturalistic teleology is of focal significance; the concrete substitute for "natural law" is that which is "required" to resolve the tensional situations. Specific direction is supposed to be found by examination of the "lacks of a situation." The procedure is left obscure. Most serious is the absence of treatment of the interlocking of situations and their respective "lacks." All men distributively may seek to resolve their confused situations; in a Darwinian scene, little light is thus afforded the direction of human affairs. Beside the tacit general moral assumption that needs should be met, there must be, for the resolution of mixed conflicting situations, priorities of some needs over others. Various statements by Dewey, none of them definitive, adumbrate different hypotheses; these are not more satisfactory than the historical models they suggest.

Friday Afternoon Session, April 3

PHILOSOPHY

EUGENE G. BUGG, Chairman

*Symbolic Tonality & the Individual.* PAUL ANGIER COMER, University of North Carolina.

This paper introduces the concept of "Symbolic Tonality" as that in the individual's make-up which is the condition of his receptivity and understanding. An endeavor is made to show the development of "Symbolic Tonality" by means of the interaction of the individual with nature and the complete social complex.

Symbolic Tonality as a causal factor in activity, as well as the place of mind, are discussed briefly with the view of suggesting the possibilities and limitations for individual freedom.

The concept presented has implications for the understanding of social problems and is, in this paper, applied in a brief exposition of class and regional division.

*A Philosophic Study of Morale.* ROBERT F. CREEGAN, Cumberland University.

Philosophy integrates human perspectives, and its own perspective is synoptic. A philosophy of Morale should harmonize many lines of evidence. Phenomenology describes Morale as an experience, in its existential aspects, and in its referential character. The existent feeling is always pervasive in a consciousness, and rather enduring. It is a mood, and, like all moods, broad in reference. Axiology investigates the value of Morale, and allows it a definite place in a hierarchy of values. Heretofore thought instrumental, Morale, also has a terminal value, and contributes in many intrinsic values. (Its relation to ethical, aesthetic, and religious activity are discussed, and then the ethical relation is given more detailed analysis.) An opposite to anxiety, Morale excludes hatred, which always implies anxiety. The infant knows neither anxiety nor Morale. These opposites are alternative felt attitudes towards a world, or the self's operations in a world. Ideal Morale expresses in feeling the conviction that existence is worthwhile as a totality, and that in detail it contains no single thing which is finally recalcitrant to the "good," and which, therefore, deserves absolute hatred. Some degree of love is accorded all creatures. Neither innate, nor universally learned, Ideal Morale crowns philosophic life quests.

*The Fundamental Postulate of the Social Ethics of Hostos.* MARJORIE S. HARRIS, Randolph-Macon Woman's College.

More than fifty years ago Eugenio María de Hostos warned that moral progress was not keeping up with material advancement. He believed with Socrates that knowledge is virtue; or, more specifically, that if the Americas could be taught to think and to understand the fundamental harmony of society with nature and of man with society, the western hemisphere would approach Utopian conditions. Was he too optimistic? No answer can be given until one understands the significance of his fundamental postulate.

The assumption that there is a preestablished harmony between man and nature and between society—made up of individuals—and man does not for Hostos point to a biological ethics. Man has a moral and an intellectual life as well as a physical life. Even to speak of the moral order is to distinguish it from the physical. And reason will freely subordinate itself to the moral law, which enjoins the practice of Stoic virtues. Of such a preestablished harmony, however, the will which is untutored by reason takes no account. Hence the man who follows the dictates of his will victimizes his world; "he does so much so badly in such a short time."

*The "City of God" and the Democracy of the Future.* ANNA FORBES LIDDELL, Florida State College for Women.

In this present war not only are our material possessions liable to destruction, our form of government has been attacked and the principle of life for which it stands. Our task is greater than the mere defense of territorial possessions or even the maintaining of a pattern of government. It is futile to fight for our lives if our lives are without value.

St. Augustine found the meaning of history in the progress of the spirit. Events are finally interpreted in terms of value. He saw that the man of good will can preserve his inner peace under the most adverse conditions because he can live in active hope and thus not only save himself from the world but build a better future for the world. This is not a device for personal escape, it is the only way to see beyond war to peace, beyond tyranny to freedom. Faith that the will of God can be done on earth as in heaven is manifested through the effort to reflect divine plan in political and social order. This provides the ideal which must underlie genuine democracy. Only as each individual comes to realize the eternal worth of every individual is actual democracy realized. But is not this the spiritual process which characterizes citizenship in the "city of God"? Men who live for spiritual and not for material good are the elect. When their number is sufficient the world will be transformed.

*Maritain: a Quixote or a Socrates?* GERARD HINRICHs, Xavier University.

Against the background of modern philosophy Maritain's advocacy of St. Thomas' philosophy is Quixotic.

The double theme of that background is that any philosophy is valid at most to its own age and that a supernatural orientation is inimical to the historic reasoned movement of philosophy.

Yet moderns confess the intellectual power of Maritain just where they feel themselves weak.

However, the comparatively limited philosophic fruitfulness of their naturalism and historical relativism prevents them from regarding Maritain's power as more than rhetorical.

## PSYCHOLOGY

JOHN PAUL NAFE, Chairman

*The Comparison of Conclusions from an Investigation of Motor Activities with the Conclusions of the Repeated Investigations.* CHRISTINE B. SCARBOROUGH, Florida State College for Women.

One of the basic problems to which the data of an experiment on speed of movement contributed is that of the dependability of the common practice of drawing conclusions from a single well-controlled experiment in this field. The experiment was repeated for the purpose of comparing the conclusions based on the data of the initial experiment with those based on the data of the repeated experiment.

Speed of movement was measured with five tapping techniques under conditions found to be optimum in a preliminary investigation. One

hundred college women served as subjects. Thirty-five days later the same subjects repeated the tests under specified conditions identical with those of the initial experiment.

Analysis of the distributions of the two sets of data indicate insignificant change in the group scores from the initial to the repeated experiment. Correlational analysis yields coefficients ranging from +.486 to +.944. The individual changes least in the mere stereotyped activities. A comparison of the conclusions based on the two sets of data indicate the need for repetition of experiments in this field as well as the use of statistical standards.

*Non-rewarded Performance in a Linear Maze.* S. R. WALLACE, Jr. and ELIZABETH B. EDWARDS, Tulane University.

This is an investigation of the distribution of errors and running time in a maze which lacks a "goal." Forty-five albino rats, divided into three groups, were run in a linear, enclosed maze, having eight pairs of blinds perpendicular to the true path. Group I, the control group was given six daily trials with food in the last segment of the maze. Group II, the non-rewarded, removed group, was given ten daily trials with the same procedure as for Group I, save that there was no food in the maze. Group III, the non-rewarded, non-removed group, was given ten daily trials with the same procedure as for Group II, save that removal was from a chance point in the maze rather than from the end.

The non-rewarded groups provided evidence of learning and of a backward elimination of errors and an increase in speed of locomotion as the end of the maze was approached. However, these gradients tended to be reversed in the later trials of the removed group. Implications for the goal gradient hypothesis of reinforcement by unimpeded activity are discussed.

*The Effect of Stereoscopic Presentation on a Reversible Configuration.* JOSEPH WEITZ, Tulane University.

In an attempt to determine some of the central phenomena involved in reversible configurations, a stereoscopic presentation was used. One half of the stereoscopic slide was composed of four small sectors of thirty degrees each and the other side consisted of four large sectors each of sixty degrees. They were so drawn that with stereoscopic fusion a complete circle was seen with alternate small and large sectors. It was found that upon fixation of the center of the figure fluctuation occurred but in a somewhat different manner from that found by the usual methods of presentation of ambiguous figures. The alternation of the small and large sectors becoming figure is much more regular under the present conditions and further, the small sectors do not take figure precedence in this situation. A study is also made here of the effect of pre-fixation of one set of sectors and the influence of size and brightness changes of the sectors. An attempt is made to evaluate some of the current theories of perception in view of the results obtained.

*A Neurovascular Theory of Cutaneous sensitivity.* B. VON HALLER GILMER,  
Carnegie Institute of Technology.

Consideration is given to the theories and facts of cutaneous sensitivity. The theory proposed here is a modification of the Nafe vascular theory and is based upon recent experimental findings. The proposal is made that the highly innervated glomeric units of the peripheral neurovascular system function differentially in mediating the cutaneous pressure and temperature qualities and some types of pain as well as serving a motor function in the regulation of body temperature.

*The Effects of Vitamins and Mineral Supplements on Convulsive Seizures  
in Albino Rats.* HARRY W. KARN and ROBERT A. PATTON, University of Pittsburgh.

Groups of albino rats, maintained on different but inadequate levels of vitamin B<sub>1</sub> intake, were tested regularly for convulsive seizures by exposure to a standard auditory stimulus. A paired-feeding technique was employed to control the caloric intake in all groups. During a 40 day experimental period all groups showed a rising incidence of seizures as the deficiency progressed. There was some evidence that a critical level of vitamin B<sub>1</sub> intake results in maximum sensitivity.

When other vitamin supplements in the B-complex group and certain mineral supplements were added to the diets of the animals there was a marked decrease in sensitivity during 40 additional days of testing.

A control group of animals allowed to feed ad lib on a balanced diet and receiving generous vitamin B<sub>1</sub> supplements was almost completely protected from seizures throughout the 80 day period of testing.

The results show that the nutritional state of the animal is an important determiner of seizure susceptibility. Therefore, great caution should be exercised in attributing seizures of this type to such factors as psychological conflict resulting from training on a discrimination problem.

This study was carried out in collaboration with C. G. King, Professor of Biochemistry at the University of Pittsburgh.

*Color Blindness and Vitamins.* KNIGHT DUNLAP and ROBERT D. LOKEN, University of California at Los Angeles.

Work in the Spring of 1941 revealed substantial improvement in color vision in eight color blind students, after administration of 25,000 units of vitamin A per day for 14 days, as compared with a matched control group of eight students.

Since this preliminary work, vitamin A in 25,000 unit daily doses has been recommended to 30 persons who wrote in from various parts of the United States because of inability to pass service tests with the Ishihara or Stilting charts. Of these, twenty show significant improvement, some being enabled to pass the tests in which they had previously failed. Control of actual dosage schedule is impossible for these cases.

Exploration with heavier dosages, and with addition of other vitamins is in progress.

*Psychological and Physical Changes Accompanying Treatment of Hypogonadism.* HERMON W. MARTIN, Emory University.

A clinical study, seeking to compare in terms of percentile positions the psychological and physical changes associated with sex-hormone treatment of a pronounced case of hypogonadism, is presented.

An undersized and apparently undernourished boy, approaching his seventeenth birthday was taken to the university hospital for respiratory complaints. The physical check-up showed marked underdevelopment of the sex characteristics, both secondary and primary. As treatment with Neo-Hombreol (testosterone propionate) was begun, the attending physicians invited the writer to follow the case and study any possible psychological effects that might accrue along with the possible physical results.

Several standardized measures of the personality were administered at intervals from September 1940 to July 1941, with a final check on the status of the boy in March 1942. The psychological changes found seem to be quite as definite and interesting as the physical.

*Mental Deterioration Following Carbon Monoxide Poisoning.* MILTON B. JENSEN, Louisville, Kentucky.

The subject, a man of 34, attempted suicide by carbon monoxide in November 1939 following which he was unconscious for about 72 hours and was hospitalized for two weeks.

As a child he was an excellent student, leading his classes through the elementary grades and high school. Intensive study of the piano was begun at seven or eight under the direction of his father, a skilled musician. His major ambition was to be a concert pianist, an ambition impinged upon him by his parents, particularly the mother, an ex-school teacher of pre-World-War-I Germany.

Following graduation from High school he studied at a Commercial School and then worked most of ten years as a private secretary and as a minor business executive.

Eighteen months after poisoning he simulated some schizoid personality disturbances which, upon further examination, proved to result from cerebral destruction.

Space perception was severely impaired and color vision virtually destroyed. Typing, playing the piano, matching colors, and working simple arithmetic problems were extremely difficult or impossible.

There were no hallucinations, no delusions, and orientation with respect to time and place was reasonably good.

Space perception has improved considerably during the past ten months, though color perception is unimproved. Neurological and psychological findings are presented.

Saturday, April 4  
JOINT SESSION  
FRITZ MARTI, Chairman

*Basic Postulates Neglected in the Application of Standard Parameters to Empirical Samples of Biotic Data.* CHRISTIAN PAUL HEINLEIN,

University of California at Los Angeles and Florida State College  
for Women.

A distinction is made between parameters and statistics. The properties and relations which characterize parameters commonly utilized in statistical methodology and normative science are described and the limits of their functions defined as basic postulates. In the description of biotic phenomena, the practical importance of correctly estimating appropriate parameters is stressed. The mathematical procedure of determining the parameter of best fit for a limited sample of biotic data is considered in some detail. The concepts of drift and kurtosis are related to methods of estimating the representativeness and consistency of biotic events. In the prediction of biotic properties from selected parameters, a primary distinction is made between incidental communality and causal efficacy and the relation between these modes and the dimension of time. Finally, the misapplication of standard parameters to empirical frames of reference is exemplified by practices current in psychological literature.

*Universals and Immortality.* ROBERT LEET PATTERSON, Washington,  
D. C.

In this paper I raise the question whether, if he reject Plato's theory of Forms as too obscure and too heavily weighted on the side of transcendence, the believer in universals as genuine realities *extra mentem*, can nevertheless construct an argument for the soul's immortality resembling the line of reasoning in the Phaedo. His epistemology posits value as objective, and as related to the self as its end. And if value be the end of the self, the self must be able to attain complete and permanent union therewith; that is to say it must be immortal, otherwise the result will be moral tragedy. The universe will then be evil, and evil is chaotic and parasitic in nature. It can be shown, however, that the universe is a system since the relation of causality, which directly or indirectly connects all entities, involves, as Professor Ewing has shown, logical entailment. In this system universals must be included. And the essence of system is harmony. The universe being thus systemic in character, evil cannot be predominant, but must be relatively superficial. But it will be predominant, as we have seen unless the soul be immortal. These considerations suffice to render immortality highly probable.

*Psychology and Epistemology.* HERBERT SANBORN, Vanderbilt University.

The traditional method in psychology, which was patterned after the abstract, mechanical, quantitative method of nineteenth century natural science, was unable to give adequate treatment to the fundamental problems presented to it for solution by ethics, aesthetics, and epistemology. Purpose and value were thought to be explained in terms of causality, which involved an equivocation and an *ignoratio elenchi*. Recently, under the influence of a reoriented natural science, certain schools of psychology have tended to be more concrete in their approach to these and other problems. The most recent of these, *Ganzheit* psychology, is attempting a thoroughgoing reinterpretation of psychological data from the point of view of total experiences. The result has been a more ade-

quate treatment of the problems of personality, leading to a considerable development of typology and characterology with the formulation of practical personality tests that constitute an important feature in the voluminous bibliography of war psychology of present day Germany. These schools suggest further possibilities of development in the direction of a philosophical psychology, whose general aim might be some validation of the hierarchies of purposive acts which constitute personality. The fact that any nexus of purposive acts may have gaps should be no more disturbing than the existence of missing links in every causal chain. One of the most important tasks of such a psychology would be the validation of the general conditions of thought and knowledge, which from the point of view of epistemology itself are purely theoretical or ideal.

*Modern Science and the Exclusion of Teleology: The Contribution of Descartes.* ALBERT G. A. BALZ, University of Virginia.

Descartes, in repudiating the employment of teleology in the sciences of nature, both recognized the temper of his age and determined the character of scientific inquiry. The questions arise: Upon what basis and under what intellectual auspices did Descartes effect the exclusion of finality? In what sense and to what degree is finalism really excluded and to what extent does finalism persist in a transformed sense? The argument of this paper is that the Cartesian attitude was fostered by conditions within Scholasticism itself and is at bottom an expression of Thomistic theses tacitly accepted by him.

PROCEEDINGS OF THE SEVENTEENTH ANNUAL  
MEETING OF THE MIDWESTERN  
PSYCHOLOGICAL ASSOCIATION

ROBERT H. SEASHORE, SECRETARY-TREASURER,  
NORTHWESTERN UNIVERSITY

The Seventeenth Annual Meetings of the Midwestern Psychological Association were held at Hotel Statler, St. Louis, under the auspices of the Department of Psychology of Washington University, May 1 & 2, 1942. Dr. John P. Nafe, Chairman, and the other members of the department, were in charge of local arrangements. The formal sessions, arranged by the program committee, Dr. W. N. Kellogg, chairman, included 54 papers on: comparative psychology, psychological tests, human learning, social psychology, abnormal psychology, conditioning, personality, and physiological psychology. Symposium topics included learning, conditioning theory, problems of graduate students, education and psychology, motivation, industrial and vocational psychology, propaganda and morale, and psychology and the war.

At the annual banquet Dr. E. A. Culler of the University of Rochester acted as toastmaster. Dean R. F. Jones of the Graduate School of Washington University, gave the address of welcome. The address of the retiring president, Dr. James P. Porter of Ohio University, was on the subject "Psychology and the Functional Integration of Human Behavior." 228 persons registered at the meetings, a wartime decline of about one-third as compared to other years at other cities similarly located.

New officers elected for the fiscal year beginning October 1, 1941, were: President, Robert H. Seashore, Northwestern University (1942-43); Secretary-Treasurer, Dael L. Wolfle, University of Chicago, (1942-45); Members of Executive Council, Chester W. Darrow, Institute of Juvenile Research (1942-45) and Dean A. Worcester, University of Nebraska (1942-44) to fill unexpired term of former council member, Dael L. Wolfle.

The association accepted the invitation of the University of Michigan to meet at Ann Arbor during the last week end in April or the first week end in May in 1943, unless governmental emergency plans interfere.

## PROGRAM

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Friday, May 1, 9:00 A.M.

**SESSION A. COMPARATIVE PSYCHOLOGY**

JAMES P. PORTER, Chairman

*Group Self-selection Maintenance as a Method in the Study of Food Preferences and Appetites.* PAUL THOMAS YOUNG, University of Illinois.

Groups of rats maintained in "cafeterias" were offered a free choice among twelve dietary components. Each animal had an opportunity to select and balance his diet. Preference tests were run between pairs of the dietary components following controlled deprivations of the food elements.

*The Hunger-thirst Equilibrium as Studied by the Preference Technique Under Conditions of Group Self-selection Maintenance.* LEON D. SHAPIRO, University of Illinois.

Twenty-two rats were maintained upon a diet of powdered dog chow and distilled water. Preference tests were made between food and water following total deprivation periods of 4 to 144 hours. For all deprivations food was preferred to water. Probably the head receptors determined the choice.

*The Equilibrium Between Carbohydrate and Protein Appetites as Studied by the Preference Method Under Conditions of Group Self-selection Maintenance.* JAMES P. CHAPLIN, University of Illinois.

Groups of rats were maintained upon a self-selection diet of twelve components including sucrose (carbohydrate) and casein (protein). A preference test between sucrose and casein was run following deprivation periods ranging from 24 to 144. The carbohydrate was consistently preferred.

*A Comparison of Efficiency of Two Types of Visual Discrimination Apparatus in Establishing Discrimination Habits in Hooded Rats.* DONALD A. PETERSON, University of Chicago.

A new discrimination apparatus is compared in efficiency with the Lashley Jumping Apparatus. A brief description of the apparatus and problems used is given. The results indicate that the Lashley apparatus is more efficient on easy problems. Possible uses of apparatus and criteria for different purposes are discussed.

*The Auditory Sensitivity of the Laboratory Rat.* L. A. PENNINGTON and J. T. COWLES, University of Illinois.

Two groups of animals, trained by two different procedures, have yielded audiometric data pertaining to rodent sensitivity within the range of 64 to 11,584 cycles. Comparisons between the instrumental and classi-

cal conditioning methods in audition and between preoperative and post-operative sensitivity curves are reported.

*Some Factors Which Inhibit the Abnormal Reaction to Auditory Stimulation.*

NORMAN R. F. MAIER, University of Michigan.

In a group of experiments, the following factors were found to inhibit completely the abnormal reactions to auditory stimulation: (1) preliminary stimulation with an ineffective auditory stimulus, (2) repeated exposure to auditory stimulation regardless of whether seizures occur, and (3) lowering of body temperature and excessive muscular activity. The consequences of these findings are discussed.

*The Role of Final and Sub-goals in Distance Discrimination by the White Rat.* KENNETH W. SPENCE and G. ROBERT GRICE, State University of Iowa.

The present investigation reports data bearing on the inference recently put forward by Gilhousen to the effect that white rats discriminate differences in the lengths of alternative maze paths on the basis of sub-goals such as are provided by the beginning of the common final section of the path leading to the goal.

*Delayed Discriminative Matching-from-sample by a Rhesus Monkey.* BENJAMIN WEINSTEIN, University of Wisconsin.

Using the previously described matching-from-sample method, a monkey was trained in a delayed reaction problem. The subject examined two different samples—one movable, and one fixed. After 15–60 seconds with the objects out of sight, the subjects matched the movable sample from among five choice objects, and refrained from matching the fixed sample.

Friday, May 1, 9:00 A.M.

SESSION B. PSYCHOLOGICAL TESTS

FRED MCKINNEY, Chairman

*The Optimum Use of Test Data.* MAURICE LORR, U. S. Civil Service Commission, and RALPH K. MEISTER, Moosehart Laboratory for Child Research.

This paper presents a briefer and more efficient method of administering and scoring age scale tests of the Binet type. MA score is determined by the points at which the individual passes 50% of the items. Comparisons of the two methods are made for a sample of 100 cases.

*Comparison of the Revised Kent Emergency Battery with the Revised Stanford-Binet and the Kuhlmann-Anderson Tests.* FRANCES A. MULLEN, Bureau of Child Study, Chicago.

Suggestions for standardized administration and scoring of the revised emergency battery are given. Correlations of each component with accepted individual and group mental tests are presented. Norms derived by equating raw scores on each component to mental ages obtained from other tests are available.

*The Improvement of Reading on the College Level by Means of a Practice Device.* DEWEY B. STUIT, State University of Iowa.

The purpose of the study was to measure the effect upon reading achievement of: (1) exercises presented on the Buswell pacing machine and (2) the taking of weekly tests, without any other reading exercises. The groups used to investigate (1) both gained significantly but there was little difference between them. Groups used to investigate (2) showed no significant differences.

*"Blind" Diagnoses on Several Personality Questionnaires Checked With Each Other and the Psychiatric Diagnoses.* PAUL H. REED, DePauw University, and PHYLLIS WITTMAN, Elgin State Hospital.

Humm-Wadsworth comparisons are given for a control group of 217 and Elgin State Hospital population of 477. Comparisons of Humm-Wadsworth with psychiatric diagnoses are also given. "Normal" and Cycloid components differentiate controls from experimental groups. Schizoid, Hysteroid, and Epileptoid do not. "Normal" and Cycloid components coincide with psychiatric diagnoses. Other components do not.

*The Thematic Apperception Tests. Qualitative Conclusions as to its Interpretation.* D. RAPAPORT, Menninger Clinic, Topeka.

The clinical application of the Thematic Apperception Test is described. The principles of its interpretations are shown to rest on the degree of observance of the test instructions, on the identical strivings attributed to the phantasy figures described, and on the obvious misinterpretation of the test pictures.

*The Coordination of the Speech Musculature of Stutterers and Non-stutterers.* LOIS KRIEGMAN, Institute of Juvenile Research, Chicago.

A study was designed to test the hypothesis that there is no difference between stutterers and non-stutterers in rate of movement of the tongue, jaw, lips and fingers or in the ability to reproduce a temporal pattern of movement with these structures. The results of the experiment substantiated the hypothesis.

*The Scaling of Word Attributes.* C. HESS HAAGEN, State University of Iowa.

To provide learning materials with quantified degrees of relatedness in meaning, associative strength, and vividness, eighty series of five adjectives, related in meaning and paired with a common base word, were presented to judges who arranged the word-pairs along a seven point scale in terms of these three attributes.

Friday, May 1, 9:30 A.M.

#### 1. SYMPOSIUM: LEARNING AND CONDITIONING THEORY

R. H. WATERS, Chairman

Friday, May 1, 9:30 A.M.

**2. SYMPOSIUM: PROBLEMS OF GRADUATE STUDENTS**

CHARLES C. GIBBONS, Chairman

Friday, May 1, 1:15 P.M.

**SESSION A. HUMAN LEARNING**

NORMAN R. F. MAIER, University of Michigan, Chairman

*Error Gradients Around Success in Multiple-choice Learning.* M. H. MARX and M. E. BUNCH, Washington University.

A further analysis of error repetition around success in multiple-choice learning indicates that success strengthens the earlier wrong responses to each nearby stimulus, and not merely the last wrong response (as found by Thorndike, Muenzinger, *et al.*). This result also appears as a gradient, decreasing with distance in steps from success.

*Level of Mastery and Reminiscence in Pursuit Learning.* CLAUDE E. BUXTON, Northwestern University.

Subjects practiced to a criterion of 5, 20, or 35 per cent of the possible score on a single trial on the pursuit rotor. Their "recall" scores after a 10 min. rest are compared with scores for a matched no-rest group. Reminiscence is greatest at the moderate level of mastery before rest.

*Human Learning on a Three-point Walking Maze.* STANFORD C. ERICKSEN, University of Arkansas.

The subject is required to learn the correct sequence of moves between three platforms set eight feet apart. Data are presented on two topics: 1. Kinesthetic vs. ideational control in this type of path finding; 2. The extreme sensitivity of this habit to retroactive inhibition. Theoretical implications are discussed.

*A Test of the Two-factor Theory of Retroactive Inhibition by Use of the Paired Associates Technique.* B. J. UNDERWOOD, State University of Iowa.

A test of the two-factor theory of retroactive inhibition, using paired associates and two different criteria of original and interpolated learning, shows that while the differences between retroactive and proactive inhibition are statistically insignificant they are consistently in the direction that would support the two-factor theory.

*Learning in Nursery School Children.* HAROLD GULLIKSEN, University of Chicago.

Two different types of learning problems, i.e., a relative size discrimination, and a total size discrimination, have been given to twenty-four nursery school children. The data are analyzed in terms of parameters of the learning curves to show the relative difficulties of the two types of learning problems.

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*An Error Analysis of Serial Learning.* R. H. WATERS, University of Arkansas.

The type and interrelationships of errors in serial learning are studied. Several types of errors are identified and the progressive changes in these errors with increasing practice are investigated. Most of the errors consist of the subject's making no attempt to anticipate. Extra-list and anticipatory errors are few in number. Implications for theories and character of serial learning are given.

Friday, May 1, 1:30 P.M.

**SESSION B. SOCIAL PSYCHOLOGY**

HARVEY C. LEHMAN, Chairman

*Leadership and Social Acceptance in the College Classroom.* ROY A. DOTY, Ohio State University.

Presents data gathered from five classrooms by means of specially prepared instruments to measure social acceptability, social distance, acquaintance, and leadership. The data are analyzed to show (1) the relation of qualities of leadership to social acceptability, (2) the basis of students' choice of leaders and participants in groups selected for different purposes, (3) the relationship of race, intelligence, academic record, emotional stability, degree of acquaintance, and personal characteristics to the two factors studied, and (4) the social structure of college classes.

*The Mental and Social Development of Infants in Relation to the Number of Other Infants in the Boarding Home.* HARRIET L. RHEINGOLD, Institute of Juvenile Research, Chicago, Illinois.

Twenty-five infants were examined in their boarding homes prior to adoption. About half were the "only" infants in the home. The "only" infants made a better social and emotional adjustment to the examiner and performed better on tests of mental, motor, and social development.

*Democraticness, Autocraticness, and the Majority Point of View.* THEO. F. LENTZ, Washington University.

The data presented in this paper consist of trait and item correlations between two variables: (a) Democraticness and (b) Majority-Mindedness. Findings lend weight to the assumption that the greater the degree of social adjustment of the individual, the greater the faith in the democratic way of life.

*Attitude Toward American Participation in the European Conflict.* E. T. KATZOFF, Illinois Civil Service Commission, and A. R. GILLILAND, Northwestern University.

Attitudes toward American participation in the European War varied greatly among colleges. It varied with political events and rose markedly at our entrance into war. The form of the curve representing distributions shifted from bi-modal to so called J curve to a normal distribution.

*The Effect of Competition on the Performance of Tasks of Differing Degrees of Difficulty.* DELOS D. WICKENS, University of Wisconsin.

College students performed arithmetic tasks of four different degrees of difficulty in a lone situation and later in a competitive situation. Results showed that the social motive of competition did not increase performance to the same extent at all levels of difficulty, but was less effective for the more difficult problems.

*Determinants of Legislative Behavior in the U. S. House of Representatives.*  
JOHN C. EBERHART, Northwestern University.

In the United States House of Representatives the modal frequency of official legislative acts (introducing bills or resolutions, making speeches or motions, submitting petitions, etc.) is zero or near zero, and the frequency distributions are J-shaped. Principal determinants are committee responsibility, seniority, political needs, legislative obsessions, and time limitations.

Friday, May 1, 2:00 P.M.

SYMPORIUM: EDUCATIONAL AND CHILD PSYCHOLOGY  
WILLIAM CLARK TROW, Chairman

Friday, May 1, 2:00 P.M.

SYMPORIUM: MOTIVATION  
KENNETH W. SPENCE, Chairman

ANNUAL BUSINESS MEETING, 4:15 P.M.

ANNUAL DINNER (Informal) 6:00 P.M.  
E. A. CULLER, Toastmaster

*Address of Welcome:* Dean R. F. JONES, Graduate School, Washington University.

*Presidential Address:* JAMES P. PORTER, Ohio University.  
Subject: "Psychology and the Functional Integration of Human Behavior."

Saturday, May 2, 9:00 A.M.

SESSION A. ABNORMAL PSYCHOLOGY  
JOHN J. B. MORGAN, Chairman

*A Preliminary Study of the Childhood Behavior Patterns of Institutionalized Psychotic Patients.* JAMES E. BIRREN, Northwestern University, and PHYLLIS WITTMAN, Elgin State Hospital.

Childhood behavior patterns of 50 individuals comprising the different diagnostic groups of psychoses were examined to ascertain whether or not they evidence a similarity of personality in childhood. The purpose of this study was to evaluate the efficacy of an historical approach to per-

sonality as a diagnostic and prognostic aid, as applied to psychotic patients.

*A Psychometric Pattern Study of the Relationship Between Social Adjustment and Behavior Efficiency.* SIDNEY W. BIJOU, Wayne County Training School.

Actual accounts of the social adjustment of 164 mentally retarded young men who had been separated from the Wayne County Training School for an average period of six years were rated. Pattern analysis of psychological and educational test results showed that only behavior efficiency measures are related to levels of social adjustment.

*Characteristic Psychographs of Mental Efficiency for Various Psychiatric and Chronological Age Classifications.* PHYLLIS WITTMAN, Northwestern University and Elgin State Hospital.

An initial psychometric examination is given routinely to all patients (cooperative enough to answer any questions) within the first two weeks of their admission to the Elgin State Hospital. This paper presents test results for 5,146 psychotic patients and 398 non-psychotics, together with a discussion of the results and possible interpretations.

*Some Psychological Effects of Bilateral Prefrontal Lobectomy.* HOWARD F. HUNT, University of Minnesota.

Bilateral prefrontal lobectomy was performed on two female psychiatric patients. Extensive pre- and post-operative psychological examinations were given these patients, and comparisons between the results of these two sets of examinations will be discussed.

*Mental Efficiency Levels Before and After Fever Therapy in Syphilitic Meningoencephalitis.* MARY MUNSON, Elgin State Hospital.

Following therapy there was improvement on the average in every measurement used. On some of the individual tests of the Wechsler-Bellevue the difference was not significant. However, of verbal, performance, and total I.Q.'s, the difference between the before-treatment and after-treatment scores was highly reliable. The results on the Babcock Scale followed closely those for the Wechsler-Bellevue. The improvement in cooperation, although not great, was significant, and showed definite agreement between the psychologist's and psychiatrist's ratings.

*A Further Validation of Role Therapy.* ALEXANDER J. ROBINSON and GEORGE A. KELLY, Fort Hays Kansas State College.

The present study has shown simplified ways for the clinician to derive the role to be used in "role therapy" and to validate it before it is tried out on the patient. The five role-dramatizing sessions have been reduced to a standard form.

*Studies in Psychosomatics: the Influence of Hypnotic Responses on Gastric Hunger Contractions.* JULIAN H. LEWIS and THEODORE R. SARBIN, University of Chicago.

This preliminary study is concerned with the influence of hypnotic suggestion upon gastric hunger contractions. In addition to two types of control situations, hypnotic sessions were devoted in attempting to eliminate hunger contractions from an active stomach and to induce contractions in a quiescent stomach.

Saturday, May 2, 9:00 A.M.

SESSION B. CONDITIONING

E. A. CULLER, Chairman

*A Simple Conditioning Interpretation of Discrimination Learning.* GEORGE W. BOGUSLAVSKY, University of Chicago.

A comparison of the Lashley jumping apparatus and the Chicago uniorientational maze has revealed the inadequacy of punishment if applied in a situation different from that in which the response occurred. The apparatus providing an opportunity for correcting a wrong response in the presence of the stimulus is most conducive to rapid learning.

*Effects of Negative Reinforcement.* WILLIAM K. ESTES, University of Minnesota.

Two effects of punishment upon a conditioned operant response were demonstrated: (1) a temporary inhibition, varying with amount of punishment, and attributable to emotional conditioning; and (2) a modification of the total height of the extinction curve, negligible for mild punishment and reaching significance only for protracted severe negative reinforcement.

*Sensitization and Association in Eyelid Conditioning.* DAVID A. GRANT, University of Wisconsin.

Eyelid responses to light were compared following conditioning, pseudo-conditioning, and visual fixation procedures. The pseudo-conditioning and fixation procedures resulted in increases in the frequency of eyelid reactions comparable to those resulting from conditioning. The conditioned responses tended to differ from the non-associative responses in amplitude, duration, latency, and overnight retention.

*Tests of Sensory Pre-Conditioning with Human Subjects.* W. J. BROGDEN, University of Wisconsin.

Sensory pre-conditioning was investigated by pairing tone and light, then making the light a conditioned stimulus for the galvanic skin response, and following this with the tone alone. No consistent evidence of sensory conditioning was obtained when the results of the experimental group were compared with those of three control groups.

*Two Types of CR's in Flexion Conditioning.* N. H. PRONKO and W. N. KELLOGG, Indiana University.

When dogs are conditioned by the pairing of 2 electric-shock stimuli, a kind of muscle twitch appears in the conditioned member which is distinct both from the usual flexion CR and from the unconditioned reflex.

This type-T (twitch) CR differs in amplitude, latency and frequency from the type-L (regular) CR.

*Discrimination Learning Without Primary Reinforcement.* HARRY F. HARLOW, University of Wisconsin.

Three Rhesus monkeys were given preliminary training in which they learned to solve discriminations following a single reinforcing trial. In the experiment proper the animals solved a series of problems requiring selection of the correct member of a pair after being shown only the positive object. Positional and secondary cues were controlled.

*The Effect of a Discrimination Stimulus Transferred to a Previously Unassociated Response.* KATHERINE C. WALKER, University of Minnesota.

A stimulus which had been the basis of a discrimination for rats running a straightaway showed a similar discriminative effect when first paired with a lever-pressing response associated with the same drive.

*Facilitation of the Unconditioned Response By the Conditioned Stimulus in Buzzer-shock Conditioning of Rats.* J. DONALD HARRIS, University of Rochester.

Amplitude of response to a series of 10 shocks a day for 10 days shows from day to day a typical negatively accelerated decrement. Unconditioned responses to shock during conditioning, however, increase in amplitude until the conditioning group responds to the shocks half again as much as the shock-alone group.

Saturday, May 2, 9:30 A.M.

SYMPOSIUM: INDUSTRIAL AND  
VOCATIONAL PSYCHOLOGY

ARTHUR G. BILLS, Chairman

Saturday, May 2, 9:30 A.M.

SYMPOSIUM: PROPAGANDA AND MORALE

A. R. GILLILAND, Chairman

Saturday, May 2, 1:15 P.M.

SESSION A. PERSONALITY

CARLYLE JACOBSEN, Chairman

*Evaluation of Educational Goals and Achievement.* STANLEY S. MARZOLF, Illinois State Normal University.

To determine if there is any relationship between achievement and the manner of rating 61 statements of educational outcomes, 154 freshmen in psychology rated these statements on an eleven-point scale of worthwhileness. The manner of rating was compared with the point-hour-ratio and slight positive relations were found.

*The Physiological Conception and Treatment of Certain Anxiety States.* EDMUND JACOBSON, Laboratory for Clinical Physiology, Chicago.

Tension patterns in the neuro-musculature characterize anxiety states. These can be recognized externally in the facies and elsewhere and internally as spasticity in parts or the whole of the alimentary tract and other viscera. The evidence indicates that the tensions are essential rather than mere "accompaniments" of the anxiety state.

*A Projective Method of Personality Investigation.* FRANCIS BISHOP and GEORGE A. KELLY, Fort Hays Kansas State College.

A diagnostic personality inventory constructed from the presupposition that people identify themselves with strong characters in stories they read. A series of story plots are presented in which the subject selects the solution of the conflict. Solution selected indicates nature of maladjustment. Validated by independent diagnosis using other clinical techniques.

*The Place of War Toys in the Present Emergency.* MARTIN I. RAYMERT, The Mooseheart Laboratory for Child Research.

In view of the non-existence of research on the effect of war toys on children, the author constructed and sent out to a selected group of clinical and child psychologists an opinion questionnaire in order to get some general indication of their views in this matter. The returns from the questionnaire are presented and analyzed.

*Swindlers: Their Principal Techniques of Motivation and their Foremost Personal Traits.* J. E. JANNEY, Western Reserve University.

A poll of Better Business Bureaus indicates that *confidence, cupidity, conceit, and concealment* are the principal motivational techniques. Minor techniques include appeals to superstition, the accepted virtues, civic pride, the desire for health and beauty, prestige suggestibility, and "take a chance." Large operators tend to be socially-emotionally more mature than small operators.

*The California Personality Scale as a Diagnostic Instrument.* ALAN ROSENWALD, Jacksonville State Hospital and Northwestern University.

This scale was given to schizophrenic and manic depressive patients and an adequate control group. It failed to differentiate the psychotic groups or show significant differences between experimental and control groups. The low positive correlation with an apparently valid prognostic scale indicates its undesirability as an aid in psychiatric diagnosis.

Saturday, May 2, 1:15 P.M.

#### SESSION B. PHYSIOLOGICAL PSYCHOLOGY

JOHN P. NAFE, Chairman

*Some Indices of Deception for the Interpretation of Polygraph (Lie Detector) Tests.* PAUL V. TROVILLO, Chicago Police Scientific Crime Detection Laboratory.

Polygraphic test recordings of subjects examined at a Crime Detection Laboratory (whose status as to guilt or innocence were subsequently verified) were canvassed to secure twenty-three indices of deception of three types: eleven—Blood Pressure; six—Respiratory (Keeler Polygraph); and six—Electrodermal (Charles M. Wilson recording Psychogalvanometer).

*Patterns of Muscular Activity During Simple Voluntary Movement.* R. C. DAVIS, Indiana University.

Simple voluntary movements involve widespread patterns of muscular activity which show an inverse proportionality to distance from focus, or some function of it. These patterns differ in decrement with distance for different movement locations, and for movements of different force.

*Reflex Changes During Narcosis Recorded in Electrical Units.* W. N. KELLOGG, C. R. HEADLEE, and N. H. PRONKO, Indiana University.

The strength of the electric-shock stimulus necessary to maintain a flexion reflex of constant amplitude in laboratory dogs was continuously recorded (1) after injections of Nembutal and (2) in the normal state. The method gives an indirect measure of the change in effectiveness of a depressing drug over a period of time.

*Changes in the Energy of the Alpha Band of the Electroencephalogram Following Stimulation.* JOHN R. KNOTT and HOWARD D. HADLEY, State University of Iowa.

Quantitative measures of changes in energy of the alpha rhythm following auditory stimulation (180 cycle tone) indicate great variation in such changes. These show no consistent trends from subject to subject, but for any given subject variations appear which may be related to other data previously reported.

*Changes in the Frequency-Energy Spectrum of the Electroencephalogram from Birth to Twenty-Four Years.* FREDERIC A. GIBBS, Harvard Medical School, and JOHN R. KNOTT, State University of Iowa.

From Fourier transforms of the right occipital electroencephalograms of 531 male subjects ranging in age from birth to 24 years, a series of energy *vs.* age curves have been plotted for 28 frequency bands. The data indicate those regions of the electroencephalographic spectrum best suited to psychophysiological correlation.

*Pupil Behavior in Some Situations of Ocular Discomfort.* S. HOWARD BARTLEY, Washington University.

A study of pupillary response by infra-red photography. The results demonstrate the organism's attempt to resolve stimulus conflicts. In one case, the pupil tends to minimize the effect of strong peripheral stimulation; and in the other, definite discomfort is induced through the inability of the motor and perceptive mechanisms to coincide.

Saturday, May 2, 3:15 P.M.

SYMPOSIUM: PSYCHOLOGY AND THE WAR  
DAEL L. WOLFLE, Chairman

PROCEEDINGS OF THE THIRTEENTH ANNUAL  
MEETING OF THE EASTERN PSYCHOLOGICAL  
ASSOCIATION

HARRY HELSON, SECRETARY, BRYN MAWR COLLEGE

The Thirteenth Annual Meeting of the Eastern Psychological Association was held on April 17-18, 1942, at the Biltmore Hotel, Providence, R. I., under the auspices of the Department of Psychology of Brown University. Due to war conditions attendance dropped 45% from previous years with 185 members and 171 guests, a total of 356. But what the meeting lacked in size it made up in other ways, particularly in the great interest in the relations of psychologists and psychology to the war effort. Both contributed and invited papers show that interest in war applications is great and psychologists are entering directly into war activities to an unprecedented degree. On the other hand this meeting proved that research activities are still going on and should continue both for the sake of the war effort and for the post-war period to follow. During such a period as we are now passing through the function of scientific associations such as this is perhaps best realized: to keep alive interest in research of pure and applied intent through meetings where reports of progress may be heard and discussed. If some research is continued during the war period psychologists in the post-war era will have a basis on which to resume peace-time scientific activities. It was perhaps something of this sort in mind which prompted the Program Committee "to thank those participants who did succeed in getting to the meetings despite war responsibilities and other difficulties."

The number of contributed papers, 65 this year as against 73 in 1941, showed only a slight falling off. Two Round Tables were held of the three scheduled, one film session and the general session completing the program of invited and contributed papers. An extra session called at the meeting to get first-hand information regarding selection of psychologists for their type of work in the war effort was addressed by two individuals in the key organizations for this purpose: Leonard Carmichael of the National Roster of Scientific and Specialized Personnel and Steuart H. Britt of the Office of Psychological Personnel. This meeting served the purpose of getting much-needed information to psychologists anxious to co-operate more actively with war agencies.

This year the custom was followed of having the last retired President of the Association act as Toastmaster at the Presi-

dential Dinner and Address. This function was performed by W. S. Hunter who introduced H. M. Wriston, President of Brown University, who welcomed the Association to Providence and Gardner Murphy, President of the Association who spoke on: "Psychology and the Post-War World." The address was notable in showing that psychologists, trained and equipped for interdisciplinary problems, would be called upon to help solve the numerous problems of the peace no less than the problems of war which now engage so many.

*Elections and Appointments.* Officers were elected to serve as follows: President, Gordon Allport, Harvard University, 1942-43; Secretary, Theodora M. Abel, Letchworth Village, 1942-43, to fill out the unexpired term of Harry Helson, resigned; Board of Directors, Gardner Murphy and Otto Klineberg, Columbia University, 1942-45. The Board appointed as member of the Program Committee Kurt Goldstein of Tufts Medical School for 1942-45, and as the Auditing Committee for 1942, Fred Keller and George Hartmann, Columbia University.

The following actions were taken at the Annual Business Meeting:

- (1) Proceedings of the 1941 Meeting as printed in the *Psychological Bulletin* were accepted.
- (2) The reports of the Secretary and of the Treasurer were accepted and a budget totalling \$860.00 was adopted for the year 1942-43.
- (3) The sum of \$100.00 was voted to the Secretary and the sum of \$50.00 to the Treasurer to defray expenses and as a stipend.
- (4) Seventy-six applicants for membership were taken into the Association on recommendation of the Board of Directors.
- (5) It was voted to continue the Clearinghouse of Information relative to job placement for another year with a Committee consisting of Barbara Burks, A. H. Maslow, and Theodora M. Abel, Secretary, as Chairman. The sum of \$100.00 was allocated to defray expenses incidental to the operation of this project.
- (6) A resolution to the effect that dues of members in the armed forces be remitted during their period of service was approved.
- (7) The invitation of the Department of Philosophy and Psychology of Hunter College for the Association to hold its annual meeting in 1943 at that institution was accepted with thanks. Owing to war conditions it was necessary to cancel the Lehigh meeting scheduled for next year. The meeting will be held at Hunter College during the Easter holiday in 1943.
- (8) A resolution thanking the Local Committee and Administrative Officers of Brown University for providing for the requirements of the annual meeting at a time when the demands of war increase the difficulty of serving as hosts to a large and critical organization was unanimously approved.

The financial statement for the fiscal year, 1941-42, prepared by the Treasurer and verified by the Auditing Committee is as follows:

FINANCIAL STATEMENT AS OF MAY 1, FOR THE  
FISCAL YEAR 1941-42

*Income*

Membership Dues

Dues for current year (1941-42).....	\$ 448.00
Dues paid by applicants.....	71.00
Arrears.....	84.00
Dues paid in (1942-43).....	\$ 10.00
Total Dues.....	\$ 613.00
Guest fees for 1941-42.....	137.00
Interest on savings account.....	19.50
Total Income.....	\$ 769.50

*Expenditures*

Publication of 1940-41 <i>Proceedings</i> .....	\$ 19.14
Clerical assistance to Secretary.....	100.00
Clerical Assistance to Treasurer.....	100.00
Treasurer's bond.....	5.00
Travelling expenses of officers.....	15.44
Postage, express, telephone.....	104.47
Printing.....	148.61
Mimeographing, miscellaneous clerical.....	12.59
Stationery and supplies.....	17.55
Local expenses of Providence meeting.....	37.60
Clearinghouse correspondence.....	15.42
Total Expenditures.....	\$ 575.82
Surplus for 1941-42.....	193.68

*Balance Sheet*

Cash: Fifth Avenue Bank of N. Y.....	\$ 563.13
New York Savings Bank.....	1241.47
Petty Cash: Secretary.....	20.00
Petty Cash: Treasurer.....	20.00
Total Cash.....	\$1844.60
Capital: As of May 1, 1941.....	\$1650.92
Surplus, 1941-42.....	193.68
Total Capital.....	\$1844.60

The program of the meeting was as follows:

## EDUCATIONAL PSYCHOLOGY AND MEASUREMENT

EDNA HEIDBREDER, Chairman

*A Case of a So-called Idiot Savant.* KURT GOLDSTEIN, Tufts College.

*The Effect of Money-Incentive versus Praise upon the Reliability and Obtained Scores of the Revised Stanford-Binet Test.* S. P. KLUGMAN, University of Pennsylvania.

*School Achievement as Related to the Sub-Divisions of the Stanford-Binet Intelligence Test.* J. F. GARRETT, New York University.

*Two New Measures of Reading Ability.* F. B. DAVIS, Cooperative Test Service, New York.

*Own Estimate in Relation to Objective Measurement.* SETH ARSENIAN, Springfield College.

*Rorschach Signs in the Selection of Efficient Mechanical Workers.* Z. PIOTROWSKI, B. CANDEE, and Associates, National Youth Administration, New York.

*An Experimental Analysis of Sequences of Restricted Verbal Associative Responses.* W. A. BOUSFIELD, University of Connecticut.

*Selection of the 100 Greatest Books.* DANIEL STARCH, New York.

## AUDITORY FUNCTIONS

E. G. WEVER, Chairman

*Comparative Thresholds of Pitch and Intensity in Rat, Dog, and Man.* WILLIAM ECCHER, University of Rochester.

*Interference and Distortion in the Cochlear Responses of the Pigeon.* C. W. BRAY and W. R. THURLOW, Princeton University.

*On the Frequency-Response of the Cochlea.* E. A. CULLER, University of Rochester.

*The Effect of Lesions at Various Levels of the Auditory System upon Hearing and Conditioning in the Cat.* K. D. KRYTER, University of Rochester.

*Frequency-Localization in the Auditory Cortex of the Monkey.* J. B. LICKLIDER, Swarthmore College, and K. D. KRYTER, University of Rochester.

*Auditory Acuity in Monkeys after Destruction of the Auditory Cortex.* R. L. FRENCH, Yale University.

## ANIMAL PSYCHOLOGY

R. M. YERKES, Chairman

*The Effect of Phenobarbital on Food and Water Intake, Activity Level, and Weight Gain in the White Rat.* M. R. JONES, Cornell University Medical College.

*Masculine Mating Behavior in the Female Rat.* PRISCILLA RASQUIN, American Museum of Natural History (Introduced by F. H. Beach).

*Confirmation of the Effects of Infantile Feeding-Frustration upon Adult Hoarding in the Albino Rat.* J. McV. HUNT and H. SCHLOSBERG, Brown University.

*Studies of Infantile Feeding-Frustration: The Effects of Shortening the Adult Feeding Frustration on Hoarding.* E. STELLAR, and R. L. SOLOMON, Brown University.

*Behavioral Contrasts in an Infant Chimpanzee Reared from Birth in a Human Family Environment.* GLEN FINCH, Yale University (Introduced by H. W. Nissen).

### PERSONALITY

R. S. WOODWORTH, Chairman

*Expressive Movements and the Projective Technique in Personality Analysis.* E. M. LIGON, Union College.

*A Projective Technique for the Study of Aggression in Young Children.* L. J. STONE, Vassar College.

*Mental Development of Fifty Children from Birth to Ten Years of Age.* HELEN THOMPSON, New York Post-Graduate Medical School and Hospital.

*An Investigation of Some Aspects of the Topology of the Hypnotic State.* M. BRENNAN, The Menninger Clinic (Introduced by Harry Helson).

*The Horn-Hellersberg Personality Test for Testing Adaptation to Reality.* ELIZABETH HELLERSBERG, Brooklyn College (Introduced by G. W. Allport).

*A Survey of Attitudes and Activities of Fathers.* L. P. GARDNER, Cornell University.

### PHYSIOLOGICAL PSYCHOLOGY

DONALD B. LINDSLEY, Chairman

*Conditioned Responses in Cats after Removal of the Visual Areas of the Cortex.* GLEN RAYSON, University of Rochester (Introduced by E. A. Culler).

*Experiments on the Electrical Excitability of the Eye.* H. D. BOUMAN, University of Rochester.

*Functions of the Forebrain in the Mating Behavior of the Male Pigeon.* F. A. BEACH, American Museum of Natural History.

*An Analysis of Reproductive Behavior in the Male Fish, Tilapia macrocephala, and its Modification by Forebrain Injury.* L. H. ARONSON, American Museum of Natural History (Introduced by F. A. Beach).

*Effects of Cortical Lesions upon the Reproductive Behavior of the Male Cat.* ARTHUR ZITRIN, American Museum of Natural History (Introduced by F. A. Beach).

### PERCEPTUAL FUNCTIONS

S. W. FERNBERGER, Chairman

*Initial Visual Experience in Rats.* MUNGO MILLER, Princeton University.

*Inter-Relating Conditions Determining Lightness Constancy.* HARRY HELSON and R. W. BORNEMEIER, Bryn Mawr College.

*Similarity as a Factor in the Organization of Visual Patterns in the Cat.* W. D. NEFF and WOLFGANG KÖHLER, Swarthmore College.

*The Pain Threshold for Electrical Stimulation.* L. H. LANIER, Vassar College.

*Preliminary Description of a Method for the Measurement of Anomalous Color Vision.* DEAN FARNSWORTH, New York University.

*Experiments in Comprehending.* MORITZ LOWI, Connecticut College  
(Introduced by John Seward).

### CLINICAL PSYCHOLOGY

ELAINE F. KINDER, Chairman

*Underlying Principles in Psychological Analysis.* HARRIET BABCOCK,  
Vocational Adjustment Bureau, New York City.

*Importance of Sensory Training in Speech Therapy.* S. D. ROBBINS,  
Emerson College.

*Tests as Diagnostic Instruments in Clinical Practice.* C. P. ARMSTRONG,  
Psychiatric Clinic, Domestic Relations Court, New York.

*A Study of Relationships between Performance on Eight Non-Language  
Tests and Ratings of Needlework Ability of Subnormal Girls.* E. F.  
KINDER, Rockland State Hospital, and VIVIAN FRUCHTBAM, Letch-  
worth Village.

*A Preliminary Report Concerning Group Effects upon the Performance of  
Schizophrenic Patients.* A. I. RABIN, New Hampshire State Hospital.

*A Psychometric Study of Various Types of Schizophrenic Patients.* A. D.  
GLANVILLE, University of Maine.

*The Norwich Rating Scale: Its Reliability and Usefulness.* L. H. COHEN,  
R. B. MALMO and T. THALE, Norwich State Hospital.

*Changes in the Libidinal Interest of Schizophrenic Patients Produced by  
Testosterone and Measured by the Photoscope Technique.* SAUL ROSEN-  
ZWEIG, Worcester State Hospital.

*Mental Tests as an Aid in Differential Diagnosis, Particularly in Distinguishing  
between Cerebral Pathologies and Psychogenic Disorders.*  
GLADYS TALLMAN and LOUISE HEWSON, Neurological Institute.

*The Value and Limitations of the Neurotic Signs.* M. R. HARROWER-  
ERICKSON, University of Wisconsin.

### LEARNING AND CONDITIONING

WALTER S. HUNTER, Chairman

*The Temporal Factor in the Resolution of a Conflict.* ALBERT ULLMAN,  
Harvard University (Introduced by O. H. Mowrer).

*Extinction and Behavior Variability as Functions of Effortfulness of Task.*  
H. M. JONES, Harvard University (Introduced by O. H. Mowrer).

*A New Method of Establishing Avoidance Responses.* R. R. LAMOREAUX,  
Harvard University (Introduced by O. H. Mowrer).

*Avoidance Conditioning and Signal Duration.* O. H. MOWRER, Harvard  
University.

*Reinforcement as an Associative Process.* J. P. SEWARD, Connecticut Col-  
lege.

*The Use of Latency of Response as a Measure of the Acquisition and Gen-  
eralization of a Discrimination.* R. L. SOLOMON, Brown University.

*The Effect of Distribution of Re-learning on Serial Verbal Discrimination  
Habits.* D. C. McCLELLAND, Connecticut College.

*A Case of Amnesia and Its Bearing on the Theory of Memory.* M. GILL and  
D. RAPAPORT, The Menninger Clinic (Introduced by Harry Helson).

*Conditioned Stimulus Intensity and Response Magnitude.* KARL ZENER,  
Duke University (Introduced by Harry Helson).

### SOCIAL PSYCHOLOGY

CARROLL C. PRATT, Chairman

*Propaganda and Morals.* S. S. SARGENT, Barnard College.

*The Effect of Rehousing on Morale.* J. M. SEIDMAN, Brooklyn College.

*The Development of a Multiple Primary Social Attitude Scale.* L. W. FERGUSON, University of Connecticut.

"Positive" and "Negative" Projection Stemming from "Inferior" and  
"Superior" Norms. T. E. COFFIN, Hofstra College.

*The Quantitative Treatment of Categorized Data on Social Conformity and  
Other Bi-Polar Traits.* JOSEPH ZUBIN, New York State Psychiatric  
Institute.

*A Preliminary Approach to the Problem of Social Aggression.* ROSS STAGNER,  
Dartmouth College.

*Conflict, Frustration and Threat.* A. H. MASLOW, Brooklyn College.

*Dominant Behavior of Institutionalized Subnormal Negro Girls.* T. M.  
ABEL, Letchworth Village.

*A Study of Cooperation, Dominance and Other Social Factors in Monkeys.*  
WILLIAM GALT, The Lifwynn Foundation, and C. J. WARDEN, Columbia  
University.

*Sexual Status and Degree of Hunger in Chimpanzee Competitive Interaction.*  
VINCENT NOWLIS, Yale University.

### FILMS

J. MCV. HUNT, Chairman

*Aggression and Destruction Games: Balloons-Demonstration of a Projective  
Technique.* L. J. STONE, Vassar College.

*A Study of Child Development.* L. PEARL GARDNER, Cornell University.

*An Experimental Study of Reproductive Behavior in the Male Frog, Rana  
Pipiens.* L. R. ARONSON, American Museum of Natural History.

*Sexual Behavior in the Rat, with Experimental Reversal of the Mating  
Patterns of Both Sexes.* F. A. BEACH, American Museum of Natural  
History.

*Double Alternation Bar Pressing in the Rat.* HAROLD SCHLOSBERG, Brown  
University.

### ROUND TABLES

*Experimental Approach to Psychoanalytic Doctrine.* BELA MITTELMANN,  
Chairman. Participants: MARGARET BRENNAN, FELIX DEUTSCH,  
DAVID M. LEVY, HOWARD S. LIDDELL, DAVID RAPAPORT and ROBERT  
S. SEARS.

*The Rorschach Test and Its Military Applications.* BRUNO KLOPFER,  
Chairman. Participants: M. R. HARROWER-ERICKSON, MARGUERITE  
R. HERTZ and M. RICKERS-OVSIAKINA.

## PRESIDENTIAL ADDRESS

*Psychology and the Post-War World.* GARDNER MURPHY, College of the City of New York.

## GENERAL SESSION

GARDNER MURPHY, Chairman

*Psychology and the National Emergency.* LEONARD CARMICHAEL, Tufts College.

*Psychology of Sensation and Perception: Its Importance in the War Effort.* E. G. BORING, Harvard University.

*Projective Methods in Psychology.* H. A. MURRAY, Harvard University.

PROCEEDINGS OF THE TWENTY-SECOND  
ANNUAL MEETING OF THE WESTERN  
PSYCHOLOGICAL ASSOCIATION

RALPH H. GUNDLACH, SECRETARY-TREASURER,  
UNIVERSITY OF WASHINGTON

The twenty-second annual meeting of the Western Psychological Association was held at the University of Washington on Friday and Saturday, June 26 and 27, 1942. There was a very small meeting, due to the fact that many persons were called away by war work, and due to the fact that the distance to Seattle from other parts of the coast, and the current rubber shortage, discourages travel. About 40 persons attended the meetings, and 16 papers were delivered at the 3 sessions.

The treasurer reported as of January, 1942, a carry-over of \$38, dues received \$104, a total expenditure of \$87 leaving a balance of \$55.

The question of the sequence of meeting places came up, and was again reformulated. Over the last 10 year period, the relative distances that all persons who attended the meetings would have to travel to reach our various meeting places would be of this order: Bay region, 12; Los Angeles region, 18; Eugene, 24; Seattle, 36. Consequently the policy of the Association was re-affirmed that we meet, say, during the odd numbered years in the Bay area; and for the even numbered years, alternately between the Los Angeles area and the Northwest.

Officers elected for the coming year were: President—Jean Macfarlane, Institute of Child Welfare, University of California; Vice-President—William Griffith, Reed College; Secretary-Treasurer for a three year term—Lester F. Beck, University of Oregon. The Association is scheduled to meet next year in the Bay area, probably June 18 and 19, 1943.

President E. R. Hilgard having resigned to take a post in Washington, D. C., Vice-President Howard C. Gilhousen gave the address at the annual banquet. His topic was "Motivation and Morale."

## PROGRAM

Friday Morning, June 26

WARNER BROWN, Chairman

*Choice Time as a Measure of Individual Differences in Serial and Discrimination Learning Problems.* DOUGLAS LAWRENCE, University of Washington. (Introduced by E. A. Esper.)

A group of 45 subjects learned a 16 move series on a polytactic maze. Individual moves were timed on every other trial. During the initial trials, these measures were negatively correlated with the trials required to reach the criterion. A comparison of the ten best and the ten poorest learners showed significant differences between the groups in the relative time spent on moves of comparable difficulty, in the relative amount of time spent in making a move and in hesitation after a move, and in the rate at which their speed of movement increased from trial to trial. During the criterion runs, the poor learners were performing in a manner analogous to that of the good learners initially. A similar analysis is being undertaken of the choice times on a discrimination problem employing verbal material.

*A Modified Procedure for the Abbreviated Revised Stanford-Binet Scale in Determining the Intelligence of Mental Defectives.* CLARE WRIGHT, Sonoma State Home.

Four hundred seventy-seven mentally deficient and borderline patients, examined with the Revised Stanford-Binet Scale, were rescored on the basis of the abbreviated scale. A difference as great as 5 IQ points occurred in one case in six, and a difference greater than 5 IQ points in one case in nine. Individual discrepancies ranged from 17 points too low to 13 points too high.

A modification of the procedure was found which gave a difference as great as 5 points for only one case in 34 and a difference greater than 5 points for only one case in 68. Individual discrepancies range from 7 points too low to 6 points too high. This modified procedure results in a twenty per cent saving in the number of items over the complete scale.

*The Relation of Electrodermal Resistance to Performance in a Serial Learning Task.* ERWIN A. ESPER and VIRGINIA FAIRFAX, University of Washington.

In a serial learning task it was found that electrodermal resistance, after an initial rise, continuously fell until the subject reached the criterion. The resistance of those subjects who required a large number of trials to reach the criterion therefore dropped to lower levels than did those of the faster learners. This finding is related to individual differences in performance at various stages of the learning.

*An Evaluation of the Institutional Adjustment of the Psychopathic Offender.* ROBERT B. VAN VORST, Preston School of Industry.

A comparative evaluation was made of twelve cases of so-called psy-

chopathic personality, committed to an institution for older delinquent boys. Each case of psychopathic personality was matched in regard to intelligence, race, age, and level of home background with about five other cases. Comparisons were made between the adjustment of each psychopathic case, and the adjustments of the matched cases, not adjudged psychopathic.

Findings indicate that the psychopathic offender is a more difficult problem to adjust within the institution than the ordinary delinquent, who may parallel him in personal traits and home background. The relevance of these findings to the practical diagnostic use of the term 'psychopathic personality' is considered.

*Studies of Children's Reasoning.* F. T. TYLER, University of British Columbia.

This study reports the results of the administration of certain types of reasoning tests to pupils in Grades 6-9. A modification of the Yerkes Multiple Choice apparatus was used in testing junior high school pupils. Concepts similar to those used by Smoke were administered to individuals and to groups (by means of film slides) at the Grade 6 level. Correlations with other psychological measures were computed.

An attempt was made to analyze the method of attack used by junior high school pupils. This suggested that these students sometimes used "negative" instances in rule induction. For this reason a more extensive study of the rôle of negative instances was made at the Grade 6 level. Some of the other problems studied include (1) sex differences, (2) types of errors in reasoning, and (3) the factors associated with the difficulty of the problems.

*An Apparatus for Producing Variable Rates of Change in the Intensity of a Tone.* GEORGE PLANT HORTON, University of Washington.

The purpose of this paper is to describe an apparatus which presents a tone whose intensity may be increased or decreased at different rates. The output of an oscillator is led through suitably selected resistances which control the voltage across a potentiometer driven by a synchronous motor. The output of the potentiometer is led to crystal headphones.

The subject is presented with a tone of 1000 cycles per second at 40 db. After three seconds this tone may or may not increase (or decrease) at a previously selected rate. Five seconds later the tone reaches a new intensity level remaining there three seconds and then is terminated. During the final period the subject is required to state whether or not the tone changed. Preliminary results on one subject will be given.

*Further Investigation of "Eidetic Imagery."* JOSEPH E. MORSH, University of British Columbia.

In reporting so-called "eidetic" phenomena, various investigators have evidently included certain data due to memory and imagination as well as after-images. Where a high incidence of "eidetic" imagery is mentioned, the investigator is apparently dealing with memory images, whereas low incidence may indicate after-images. In the present investi-

gation attempts to identify or classify "eidetic" images had to be abandoned. It seemed more fruitful for experimental purposes to consider after-images as forming a continuum with no demonstrable imagery at one extreme and vivid, persistent after-images at the other extreme. Of 256 subjects of both sexes, ranging in age from 10 to 19 years, approximately 30 per cent were unable to obtain after-images under the experimental conditions used. Thirty-four subjects reported after-images in complementary colors and 123 subjects obtained positive after-images. After-imagery showed a fair degree of correlation with art ability, a small correlation with spelling but virtually no correlation with English composition.

Friday Afternoon, June 26

SYMPOSIUM: SOME PSYCHOLOGICAL FACTORS  
INVOLVED IN THE ESTABLISHMENT  
OF PERMANENT PEACE

HOWARD R. TAYLOR, Chairman

*From the Viewpoint of Education.* HUBERT S. COFFEY, Ellensburg.

*From the Viewpoint of Clinical Psychology.* E. NEVITT SANFORD, California.

*From the Viewpoint of Animal and General Psychology.* EDWARD C. TOLMAN, California.

Saturday Morning, June 27

EDWARD C. TOLMAN, Chairman

*Attributes of Enemy, Allied, and Domestic Nationality Groups as Seen by College Students of Different Regions.* RALPH H. GUNDLACH, University of Washington.

Students at a number of universities were asked to fill out a blank which provided an opportunity to evaluate a dozen different nationality groups and sub-groups with regard to 10 different aspects or traits. Each such aspect was presented as a 7-point one-dimensional scale, such as "like-dislike" or "cruel-kindly," and the student simply checked the spot appropriate to his feeling.

Students distinguished between Japanese, and Japanese-Americans; between Nazi Germans and German Americans and German refugees, etc. Of our Allies, the Chinese are most favorably viewed, followed by the French, English and Russian. There are significant regional differences in student opinion.

*Eye Movements and Shift of Retinal Image in Stereoscopic Depth Perception.* STEVENSON SMITH, University of Washington.

The reported experiments demonstrate that the shifting of homologous stimulation from non-corresponding to corresponding retinal areas is not an essential factor in depth perception.

*Gnats and Camels in Quantitative Research.* D. WELTY LEFEVER, University of Southern California.

Recent emphasis on the exact sample theory developed by R. A. Fisher and his disciples has been accompanied in many instances by a tendency to express the results of quantitative research in terms of a degree of numerical precision unwarranted by the character of the facts involved. This paper does not debate the increased validity of the research procedure but questions seriously the meaningfulness of the accuracy implied by the statement of the results.

Several recently published illustrations of the above contention are analyzed and the degree of precision implied by the findings are examined in the light of criteria suggested. Random samples selected under controlled conditions are presented as a basis for suggesting logical limits of numerical accuracy. The examples of research chosen include a consideration of the accuracy of the mean, the standard deviation, the Pearson correlation coefficient, and the F-test for analysis of variance. The effects of errors of sampling, response, and validity are briefly considered in terms of their influence on the stated outcomes of research.

*Effect of the War Emergency on Selective Elimination of Students at the University of Oregon.* JEAN RIDDELL, University of Oregon. (Introduced by H. R. Taylor.)

Continuance with the University studies through the junior year was examined for two large unselected groups of sophomores. The control group completed the junior year before the outbreak of war; the experimental group are completing it under war conditions. Scores on the Ohio State Psychological Examination, Form 20, and first term University grade averages are compared for the two groups. In the control group selective elimination of those with low first term grades takes place, but, after the freshman year, there is no selective elimination of those with low college aptitude test scores. In the experimental group selective elimination of those with low first term grades takes place and significant elimination of those with low OCA scores, in the case of both men and women. Elimination on the basis of test score is most apparent in business administration, law, physical education and the social sciences.

*Torsion in Persons with No Known Eye Defect.* THOMAS G. HERMANS, University of Washington.

Since Listing and Donders the problem of torsional eye movements has shown a sporadic out-cropping in psychological literature. No norms for the direction or amount of torsion have been established, and current opinion is confused. In the present study norms are established for 104 male naval-science students testing 20-20 vision and having no known eye defect. The theoretical value of torsion for any combination of the two variables, as derived from the obtained means, is expressed by the equation,

$$Z = +.00573x^2 + .00001y^2 + .00148xy + .07029x + .0028y + .06876$$

in which  $Z$  is the torsion in degrees for each eye,  $x$  degrees of convergence, and  $y$  degrees of elevation above or below (plus or minus) horizontal.

*Some Correlates of the Harding Morale Scale.* SANFORD, R. N. and CONRAD, H. S., University of California.

Harding's Scale for Measuring Civilian Morale was administered to 270 college students—100 men and 170 women—on December 3, 1941. These students filled out, during the same hour, a lengthy questionnaire pertaining to numerous personal and social factors. The report discusses the reliability of the Morale Scale, and the relations of "morale score" to such variables as age, sex, national extraction, place of residence, religious denomination, College Major, favorite parent, parental harmony, introversion, and security feeling. (Dr. Edwin Ghiselli assisted in planning the research and in preparing the questionnaire.)

PROCEEDINGS OF THE ELEVENTH ANNUAL  
MEETING OF THE ROCKY MOUNTAIN  
BRANCH OF THE AMERICAN PSY-  
CHOLOGICAL ASSOCIATION

THOMAS H. HOWELLS, EXECUTIVE SECRETARY,  
UNIVERSITY OF COLORADO

The annual meeting of the Rocky Mountain Branch of the American Psychological Association was held on November 7 and 8, 1941, at the Colorado School of Mines, at Golden, Colorado. The following officers were elected: President, Robert H. Bruce, University of Wyoming; Executive Secretary, Thomas H. Howells, University of Colorado.

The following papers\* were presented:

1. *The Psychological Field as a Determinant of the Behavior and Attitudes of Preschool Children.* LILLIAN PORTENIER, University of Wyoming.
2. *The Influence of College Life on Intelligence Test Scores.* J. D. HEILMAN and NORA A. CONGDON, Colorado State College of Education.
3. *An Experimental Search for the Psychological Sources of the Phi Phenomenon.* ALBERT W. HEYER, University of Colorado.
4. *An Empirical Ranking of Written English Ability as Compared with Standardized Test Scores.* S. L. CRAWLEY, Colorado State College of Education.
5. *Some Presuppositions of Scientific Method.* PAUL CRISSMAN, University of Wyoming.
6. *The Effect of Metrazol Convulsions on Retention in the Rat.* L. I. O'KELLY, University of Colorado.
7. *Heart Beat as a Measure of Hyperthyroidism in the White Rat.* CECIL W. MANN, University of Denver.
8. *Food Ingestion as a Function of Thirst in the Rat.* JULIUS BOONSHAFT, University of Colorado.
9. *A Study of Post-college Success.* W. P. REED, University of Wyoming.
10. *Adult Occupational Adjustment.* ROBERT W. SHAW, State Capitol, Denver.
11. *The Social Psychology of Democracy.* T. H. HOWELLS, University of Colorado.
12. *The Rock River Hoax.* L. V. FEES, Fraser, Colorado.

\* These papers were also included on the program of the Colorado-Wyoming Academy of Science, and abstracts are available in the journal of the Academy for 1942.



## PSYCHOLOGY AND THE WAR

Edited by

STEUART HENDERSON BRITT

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## FIRST REPORT OF THE SUBCOMMITTEE ON SURVEY AND PLANNING FOR PSYCHOLOGY\*

BY EDWIN G. BORING, ALICE I. BRYAN, EDGAR A. DOLL,  
RICHARD M. ELLIOTT, ERNEST R. HILGARD, CALVIN  
P. STONE, ROBERT M. YERKES (Chairman)

Consequent to the "proposal for a preliminary conference by psychologists to consider a comprehensive program for coördinating psychological service for the national welfare," which was transmitted to the Emergency Committee by Edgar A. Doll in the spring of 1941, to subsequent discussions, and to a special report and recommendation on the subject by Robert M. Yerkes in May, 1942, it was voted "that the Emergency Committee regards long-range planning for the advancement of the profession as one of its fundamental problems, and designates Dr. Yerkes and a group of five or six psychologists to be selected by him as a group to prepare a report on long-range as well as emergency problems to be submitted to the Emergency Committee at a special session."

Under this mandate, Edwin G. Boring, Alice I. Bryan, Edgar A. Doll, Richard M. Elliott, Ernest R. Hilgard, Calvin P. Stone, and Robert M. Yerkes promptly were constituted a Committee on Survey and Planning. Upon the invitation of the administration of The Training School at Vineland, New Jersey, the group met in that institution June 14 and continued in session until the evening of June 20. The expenses of the conference were generously met by The Training School, for which Edgar A. Doll served as host and representative on the Committee. It is noteworthy that just twenty-five years ago the Vineland institution, under its present guiding genius, Dr. Edward R. Johnstone, provided both setting and financial support for the committee which prepared the initial group intelligence tests for use in the United States Army.

Two years ago it might have been thought wise by this Committee to draw up a comprehensive plan for a psychological general staff or board of strategy; a national center, to consist of headquarters and a laboratory; and a training school for military and other psychological specialists needed in a war emergency. Such a direct attack on the situation no longer is practicable, since,

\* This is the first report of the Subcommittee on Survey and Planning presented on July 25, 1942, to the Emergency Committee in Psychology, National Research Council. A supplement "Psychology as Science and Profession" is to appear in the November *Bulletin*.

independently or with the assistance of various psychologists, several special services already have been developed within the government to deal with problems of personnel appraisal, classification, training, and placement; with problems of psychological warfare; and with various phases of the handling of information, the measurement of public opinion, morale, propaganda, and the utilization of manpower. There now exist a multiplicity of useful psychological service agencies, which, although they may be coördinated for increase of efficiency, cannot readily be unified.

For these reasons the Committee defined its immediate task as (1) a survey and recommendation relative to the actual and potential rôle of psychotechnology in the war emergency, and (2) the formulation of a pattern for the development of psychology as science and service after the war.

This report of the findings, opinions, and suggestions of the Committee falls naturally into three parts:

- I. Psychology in the war emergency.
- II. Psychology in the postwar world.
- III. Special recommendations relative to Committee status and activities.\*

Nothing in this report may be interpreted as criticism of any particular individual or service group. The Committee realizes that in so vast a mechanism our best individual intentions and efforts may be frustrated and that democracy now penalizes and again rewards its honest and wise servants. This statement is an attempt to take an impersonal over-all view of psychological services in the war.

#### I. PSYCHOLOGY IN THE WAR EMERGENCY

Assisted by Steuart Henderson Britt, Executive Director of the Office of Psychological Personnel, Washington, D. C., the Committee at the outset made a comprehensive survey of the current areas of psychological service in the nation. The review was impressive in its variety and magnitude, for already much more has been achieved by way of opportunity for usefulness, recognition of the profession, and technical contributions than in any previous period of national emergency. It seems probable that the present conflict will do for social psychology, in the broadest sense of that term, what the first World War did for intelligence testing. There

\* Section III was not released.

is abundant ground for satisfaction, encouragement, and gratitude to those who are carrying the responsibilities of leadership and organization and who are safeguarding present advances.

Naturally the survey revealed weaknesses and neglected opportunities. How could it be otherwise in such a vast, complicated, and precipitate effort? Independent special services which involve psychology are under the necessity of demonstrating to the utmost their immediate practical value. They tend, therefore, to be competitive instead of optimally coöperative. The greater the multiplicity of such services, the greater the risk of undesirable duplication and oversights. Methods widely useful tend to be ignored or limited in their application to the service which happened to develop or adapt them. Often such neglects of adequate techniques are due to ignorance of their availability and suitability. To cite specific instances here would be invidious and unfair. New needs, of course, are constantly developing from our military experience and our lessons in dealing with manpower. Self-examination, self-criticism, and official inspection are essential, and undoubtedly they are being practiced to good effect. Nevertheless, and even at the present juncture, the Committee believes that a planning board, consisting of a few individuals unattached to any special service, would be useful in discovering duplication of effort, failure of coöperation, and those emerging opportunities and needs which no single service is likely to note or to be able to meet.

Apparent also is the inadequacy of provision for the training of psychological specialists to prepare them to meet military and other needs of the emergency. Additional schools of military psychology are urgently needed in both the Army and the Navy. The facilities of educational and other suitable training institutions should also be employed for this purpose immediately and effectively. Psychologists in administrative and educational positions as well as those in the federal services should give attention to this deficiency in our preparedness, for should the war stretch into years the shortage of psychologically trained persons for the military and educational needs of the nation will become acute.

Failure to concentrate both early and late on the problems of leadership has been a particularly grave military and civilian oversight. This Committee has discovered no adequate provision or plan for systematic and thoroughgoing attack on this extremely important group of practical problems. Adequate methods have not been developed to further the discovery, training, and utiliza-

tion of capacities for leadership. So far as is now possible, this gap should be filled by the prompt organization of a group of specialists to devise and develop methods under imaginatively constructive leadership. Such an undertaking, if properly supported by the government, might very well prove its most profitable investment in the field of mental engineering.

So far it does not appear that psychological techniques and experience have been conveniently available to the war industries. There exists no central national agency or service of psychological advice and recommendation. This neglect is also costly, for much might readily be done to supplement the work of the industrial personnel specialists and of existing federal organizations, and to increase and safeguard the production of matériel of warfare. It is the earnest hope of this Committee that persistent attention may be given to civilian needs for psychological service, and especially to those which are rapidly developing in the special war industries, in agriculture, in education, and in varied social agencies.

It is not surprising to find that the representation of psychology in key positions, where opportunity appears for usefulness in planning and in organization, is both incommensurate with our professional resources and inadequate to the current opportunities and needs. Obviously it is desirable to direct attention to these problems of placement. It is good strategy to have the right man in the right place, even though the position be of minor importance, but it is incomparably more important that psychotechnology should be strongly represented on planning boards, so that whatever contributions the profession may have to offer shall be made known and considered early instead of late. Thus far psychology has failed to take its proper rôle in the planning councils of the nation. Appropriate and sufficient effort has not been made at the right time and in the right places.

It is highly desirable, in the opinion of the Committee, that the resources of the Division of Anthropology and Psychology of the National Research Council be more generally and effectively used for and by the several federal services in which psychological techniques are being employed for the solution of problems of mental engineering. In particular it is recommended that support of the Office of Psychological Personnel be increased and its potentialities of usefulness further developed. This Office consti-

tutes our primary provision for self-help and guidance in the discovery of opportunities for professional usefulness.

The conference method is proposed as a practical means of bringing together psychological representatives of those federal services which have common problems and of affording them opportunity for profitable discussion, the legitimate exchange of information, and the improvement of coördination and coöperation among themselves and with non-governmental agencies. Whereas no federal service group ordinarily can undertake this sort of venture, the National Research Council is in a peculiarly favorable position to do so, and among its chief functions should appear such efforts to facilitate interservice contacts, the exchange of information, and the joint solution of problems of coördination.

The Committee does not presume to make at this time other than these general suggestions and recommendations concerning psychological services in the war emergency. In the interests of clarity, they are recapitulated below:

1. There should be established a general planning board to promote the applications of psychology in the war emergency.
2. Professional training schools for psychologists should be established in connection with the armed services, in the universities, and in other civilian institutions which are prepared to train specialists.
3. Further and special provision should be made for the study of leadership and the training of leaders.
4. There should be a centralized service of psychological information and counsel for the war industries.
5. Representation of psychology should be secured on the central planning councils of the nation.
6. The Office of Psychological Personnel should be given additional support, financially and through assistance and consultation.
7. The Division of Anthropology and Psychology, National Research Council, should be enjoined to arrange as practicable for conferences between psychological specialists in the armed services and in other governmental agencies.

## II. PSYCHOLOGY IN THE POSTWAR WORLD

Psychology as the science of behavior and experience and as major basis for mental engineering undoubtedly will play an increasingly important rôle in human affairs. Its representatives now have a unique opportunity and responsibility to prepare plans to promote and safeguard its development. In the new world order its knowledge and skills should be professionalized steadily and

wisely so that its applications may keep pace with emerging human needs and demands for personal and social guidance. Foremost among the conditions necessary for the sound and socially profitable maturation of the science and of its technology are: unity of spirit and action; optimal provision for the effective training of psychologists as teachers, practitioners, and investigators; and the creation of such occupational specialties within applied psychology as will satisfy individual and group demands for help in living.

In accordance with this analysis, the Committee addressed itself in turn to each of these three questions:

- A. How can a profession be wrought out of diverse elements as they exist at present and made to achieve unity of aspiration and endeavor?
- B. How can psychologists best be trained as competent, trustworthy scientists, practitioners, or both, and enabled to coöperate with mutual understanding, respect, and appreciation, despite their diversity of interests?
- C. How can social services of mental engineering be designed, directed, and developed so that they may be helpful and also equally available to all who may require them?

*Question A: How unify psychology?*

It is the conviction of the Committee that the development of psychology as science and practice should proceed in close relation; and that the scientists of the profession should welcome technological developments and generously aid and encourage them. In order to unify the profession it is proposed by the Committee that a suitably located national center be established as general headquarters, to house an organization which shall serve alike the interests of all national psychological societies and their members. Such a center might be designated and incorporated as an American institute of psychology. National societies might appropriately constitute its supporting and governing membership. Thus in a single service agency, created and conducted to promote the progress of psychology, it should be possible to unite all interests for the benefit of all psychologists, irrespective of their professional affiliation or specialization. Such a plan should tend to counteract any tendency of 'scientists' of the profession to hold aloof from 'applicationists,' or conversely; and to prevent or minimize the unnecessary multiplication of special organizations and the appearance of undesirable types of commercially motivated society.

Through its director, a governing board composed of representatives of the constituent societies, and a secretariat, such a national institute, if strongly supported, should be able to serve the profession much more satisfactorily than can existing organizations. Typical of its functions would be the handling of personnel information, employment data, public relations, publicity, the publication of professional journals, and the promotion of projects designed to advance psychology and to obtain recognition and service opportunities for psychologists. The constituent societies would of course continue as autonomous bodies, owning and controlling journals and other property, if they chose, maintaining their own standards of membership and type of organization. The institute, however, would assist their officers in a wide variety of functions, and in particular relieve them by serving as central business office, and bureau for varied and desirable professional services which at present are not available.

In supplementation of this proposal, the Committee has agreed to prepare a design for an American institute of psychology. Fortunately there exist well established precedents among the sciences and their branches of engineering which will serve in varied respects as models.

Further, the Committee suggests that plans be considered for a convention of duly appointed delegates from the several national societies to discuss and act on this proposal for an American institute. If the delegates could be selected in September of the current year and a plan presented to the societies in September, 1943, it should be possible, in case of general approval, to put it into effect by January, 1944. Otherwise, an additional year would be required for deliberation.

Pending consideration of the above proposal, and to enhance the immediate usefulness of psychology in the emergency while efforts are being made to prepare for desirable postwar developments, it is strongly recommended that the present Office of Psychological Personnel in Washington be used as national headquarters and that all members of the profession be encouraged to take advantage of its national and advisory services. It is especially desirable that psychologists generally familiarize themselves with the organization and resources of the Office, consult with its personnel as they have need, and support the undertaking by joining one or more of the psychological societies.

*Question B: How prepare psychologists?*

To the question, How best prepare psychologists for professional effectiveness? there is no single answer. The Committee, however, has agreed on certain principles of organization and action which it considers important.

Of the several types of educational institution and program which now are utilized for the professional training of psychologists, no one is clearly superior to all others. The well organized, strongly staffed graduate school has its advantages, but so also does the well planned professional school; and, in contrast with these, the combination of collegiate, graduate school, and field work opportunities for self-development commends itself to some as best of all. It is the consensus of the Committee's opinion that our profession should not adopt any one of the types of professional school represented by medicine, law, engineering, or social work. Instead, it is believed that a new type of organization for the training of psychologists should be evolved in which the desirable educational facilities of college, graduate organization, and internship are successfully integrated.

As principles of operation which would assure satisfactory ability and training, the Committee proposes the following:

*Recruitment* of suitable college students should be provided by orientation courses and other opportunities to learn about what psychology is and what psychologists do.

*Selection* by rejection or elimination is necessary to assure both ability and preparedness to profit by professional training, but so far as practicable elimination should be subordinated to directive instruction and good counsel.

*Guidance*, initially and throughout the long period of training for professional work, is indispensable. Special emphasis should be placed on the personality adjustment and professional growth of the student. Many individuals should be reoriented and directed into new and more suitable channels of educational and vocational effort.

*Pre-professional training* should include discipline in areas of the physical, biological, and social sciences, and in mathematics and its applications. However desirable it may be that a student should have some familiarity with the humanities, he cannot be considered properly prepared for advanced work in psychology until he is thoroughly grounded in the methodologies and principles of the sciences.

*No single program of instruction*, no curriculum, can be recommended as best for professional training in psychology. The way in which a discipline is used instructionally usually proves to be more important than its subject matter. And whatever the combination of experimental, historical, and other instructional courses elected by a student, he should also engage in some field work, or practical application of his field of knowledge, to acquaint him early in his professional studies with psychology at work and with relations of its facts and principles to vital problems.

*Adequately supervised and criticized service as interne*, either within the educational institution for the prospective teacher of psychology, or in school, clinic, hospital, factory, civic, state, or federal agency for those who plan to devote themselves to psychological practice, must in any event be considered indispensable. Ordinarily a full year or its distributed equivalent should be spent thus. Only exceptionally should the internship requirement, or the preparation of a thesis based upon original work, be waived.

*Interdisciplinary relations* are of the utmost importance, since defining boundaries are imaginary and it is known that we work most effectively, even as students, when we disregard departmental lines and follow our intellectual objectives through to the solution of a problem or the satisfaction of our curiosity. Moreover, for the training of psychologists no single subject is sufficient. Large areas of biological science, the methodologies of the physical sciences, some among the social sciences, and many of the procedures of mathematics should be considered essential. The really excellent representative of our science and its technologies inevitably is more than a psychologist. Wisdom dictates that as psychologists we should not concentrate exclusively on the development of techniques for our own use and for export to other disciplines, but should constantly seek opportunity to bring into the service of our own science the discoveries, methods, and modes of thinking of our fellow scientists.

*Neither length of course nor the particular educational route followed is important.* One student may profit more by three years of professional work than another does by six, and the route which proves most profitable for the one may be ill-suited to the needs or capacities of the other. Even the degree finally awarded for achievement of proficiency has significance only as it indicates the field of individual competence. Hence this Committee is of the opinion that the doctorate of philosophy should eventually be

replaced for the sciences by the doctorate of chemistry, zoology, sociology, or psychology, as the case may be.

*Certification and licensure* are essential requirements for the protection of practitioner and public, but it is thought by the Committee that attention should at present be focused rather on procedures and standards of instruction and on the educational products of the institutions which undertake to convert students into professional psychologists than on the immediate achievement of satisfactory legal protection. Educational institutions should be accredited or rated in accordance with their organization and its fruits. The annual certification of individuals who would practice their profession is preferable to certification for an indefinite period. Although the Committee does not advocate change in existing practices until the profession is more satisfactorily established and plans matured and generally agreed upon, it is believed that, for the present, improvement of the procedure for certification will best serve the interests of the profession and the public.

*Question C: How create psychological services?*

How best promote and guard the development of psychology as an instrument of social progress? This proved to be the most difficult of the questions for which the Committee sought reply, but agreement finally was reached on several relevant matters of professional policy.

(a) To define or delimit the actual and prospective categories of psychological service seems unprofitable. Rather, human needs should be studied in their emergence, and effort made continuously to develop those varieties of mental engineering which prove useful to the individual and to society. Certain terms have come into use to designate methods and areas of specialization. Thus psychotechnologists are now referred to as clinical, educational, industrial, social, from the standpoint either of procedures or of the areas of their employment. No single principle of classification is apparent, and on the whole it seems wiser that natural development rather than a logical scheme should determine the grouping of varieties of service. The evolution of medical specialties provides us with such a natural pattern. Presumably psychology's path will become established satisfactorily if we but observe and classify the problems of human behavior and experience as they present themselves for practical solution and are met by practitioners.

(b) Psychological services cannot develop profitably in isolation, for no area of knowledge and no type of application is sufficient to itself. Mental engineering, as inclusive of all psychological services, is itself a branch of human engineering. Hence psychologists, whether as scientists or as technologists, should work in intimate coöperation with their fellows in other fields of inquiry and practice. Whether they should function as principals or as subordinates should be determined by the nature of the task, not by the accident of professional prestige. Steadily the psychologist should extend and supplement the social services for which heretofore educators, physicians, priests, social workers have been mainly responsible.

(c) Finally, it is the judgment of the Committee that psychological practice should face a future in which it will serve best by becoming organized as public service, not exclusively as private practice deriving its support from fees. If psychology follows this course, the profession will be able to further the movement already in progress for the socialization of welfare services and to hasten the adaptation of existing callings to actual human needs. Professionalization and socialization, given wisdom and foresight in our planning for psychology, may proceed together. Existing institutions, such as nurseries, schools, public employment offices, clinics, welfare agencies, and hospitals, already offer varied opportunities for the practicing psychologist. They, as well as institutions of training, should hold themselves in a measure responsible for the professional competence and dependability of their specialists.

The Committee's recommendations for the more permanent development of American psychology may be recapitulated as follows:

1. There should be established a central American institute of psychology to provide professional services of personnel, placement, public relations, publicity, and publication.
2. Until such an institute is established, psychologists should be enjoined to utilize more fully and to support more adequately the present Office of Psychological Personnel in Washington.
3. The formation of an institute should be approached by the calling of a convention of the potential member societies to consider plans and to initiate appropriate action within the societies.
4. The professionalization of psychology should be promoted by the advancement and improvement of professional training, with full regard to the recruitment of students for such training, their selection, their subsequent personal and vocational guidance.

their preliminary and professional education, and their use of internships for practical experience—all with due regard to the adjustment of formal specifications to the requirements of the particular case.

5. A satisfactory procedure of certification should be developed for general use. Licensure by state or nation should await further development of the profession and concerted action, with the support of an educated public opinion.

6. It is premature to attempt classification of applied psychologists, as for example, clinical, educational, industrial, social.

7. The boundaries of psychology should not be rigidly fixed by its professionalization, and the individual should be encouraged to deviate from formal training in order to meet specific social needs.

8. The socialization of psychology as profession is preferable to its development generally or exclusively as private practice.

## PSYCHOLOGISTS IN GOVERNMENT SERVICE

DAEL WOLFLE

*Emergency Committee, National Research Council*

In the June, 1942, issue of this journal I published the names of psychologists in the service of the United States government who had submitted information in compliance with a request mailed with the current issue of the A.P.A. Yearbook. Until August 9, 1942, 70 additional questionnaires were returned by the following people. Those names marked with an asterisk are in part-time, and those without an asterisk in full-time federal service.

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THE SELECTION OF CANDIDATES FOR THE  
OFFICER CANDIDATE SCHOOL AT THE  
WOMEN'S ARMY AUXILIARY CORPS  
TRAINING CENTER

FLORENCE L. GOODENOUGH

*University of Minnesota*

That the success of the women's army as an aid to the war effort will depend to a large extent upon the quality of its leaders is self-evident. Fortunately its director, Mrs. Oveta Culp Hobby, was sufficiently far-seeing to recognize this fact and to arrange for the selection of candidates for the First Officer's Training Camp in such a way that neither outside influence nor political expediency could influence the choice. As far as was humanly possible, merit only was considered. Since human judgment is fallible, the selections may not always have been wise, but they were at least made by a group of persons who may properly be classed as experts in their various fields and who were free to make their choices as they saw fit.

The procedure was as follows. In accordance with the instructions given in a nation-wide publicity campaign, women who desired to enroll for training as officers went first to the local recruiting stations. There they were given the necessary application blanks and a folder in which the basic information about requirements for admission, rates of pay, duties, furloughs and the like was given in question and answer form. Completed applications together with proof of citizenship, date of birth, graduation from high school and a health certificate were sent to the main local recruiting office where they were examined and all that failed to meet formal requirements were rejected. Qualifying candidates were then notified of the time and place to take the mental alertness test which was similar to that used in the regular army. Those passing were then interviewed by a local board which consisted of the main recruiting officer and two women assistants selected by him. Officers were instructed to choose women from the personnel divisions of business or social service organizations wherever possible. If no women who were experienced in interviewing were available, those who had taken an active part in directing the work of such organizations as the YWCA, the Community Chest Council or the Red Cross were chosen.

Local interviewers were instructed to consider first of all the candidate's proved or potential ability as a leader of other women.

Leadership, it was pointed out, is an intangible, but certain general criteria to be used as a partial guide were indicated. Immediately after each interview a short rating scale was filled out on the basis of the joint opinion of the members of the board. Ratings were given on such matters as general appearance and bearing, speed of comprehension, poise, clearness and ease of verbal expression and the like. The report was concluded with an over-all judgment of the candidate's potentialities as an officer together with whatever notes or comments were deemed pertinent.

Physical examinations were given to the 500 candidates in each of the nine Army Corps Areas who, on the basis of the judgment of the local boards and the data given in the application blanks seemed to be the most promising. The procedure for selecting the 500 for physical examination differed somewhat from one Corps Area to another. In all cases, the records of all accepted candidates were sent directly to Corps Area Headquarters and a selection made by the Corps Area Boards who conducted the final interviews.

The Corps Area Boards consisted in each case of an officer from the main Corps Area recruiting office, a woman assistant appointed by him according to instructions similar to those given to the officers in charge of the local boards, and a representative appointed by the Director of the W.A.A.C. Two boards were chosen for each Corps Area. Of the 18 women appointed by the Director, 7 were psychologists.\* In the selection of these persons assistance was given by Dr. Steuart Henderson Britt, Executive Director of the Office of Psychological Personnel, National Research Council, Washington, D. C. The others were, for the most part, college deans of women or heads of important social service agencies.

From the 500 who were given physical examinations, approximately 240 of the most promising were selected by the Corps Area Boards in each of the nine areas to be called to Headquarters for a final interview. These interviews occupied from twenty minutes

\* Florence L. Goodenough, Professor of Child Welfare, University of Minnesota; Jean W. Macfarlane, Professor of Psychology, University of California; Grace E. Munson, Director, Bureau of Child Study, University of Chicago; Helen Peak, Professor of Psychology, Randolph-Macon Woman's College, Lynchburg, Virginia; Millicent Pond, Director, Psychological Test Research, Scovill Manufacturing Company, Waterbury, Connecticut; Agnes Arminda Sharp, Clinical Psychologist, Chicago; and Ruth S. Tolman, Bureau of Agricultural Economics, Department of Agriculture, Washington, D. C.

to half an hour in each case. Although more time would have been desirable had the schedule permitted, the data provided in the application blank together with the reports of the local boards eliminated the need for many of the questions usually asked and in most cases furnished advance information that indicated the general course which the interview should take. As was to be expected after so rigorous a sorting, the surviving candidates were, for the most part, a highly superior type.

At a preliminary conference held in Washington which was attended by all of the 18 women selected by the Director, the general plan for conducting the final interviews had been discussed. These interviews were somewhat less formalized than those conducted by the local boards since they were designed primarily to elicit clues as to the personality characteristics, attitudes and general adjustment of the candidates. At the close of each interview, a record form was filled out by the members of the board acting as a group. In conformity with the nature of the interview, these records were less formalized than those made by the local boards. More space was provided for individual comment and proportionately less emphasis was placed upon defined ratings.

After all the interviews had been completed, each board held a meeting in order to make a final classification of the candidates. Each set of records was reviewed in some detail. On the basis of majority opinion, the candidates were then ranked in approximate order of merit. In general, a high degree of uniformity of opinion among the board members was reported.

Many candidates of outstanding potentialities were rejected because they either had someone dependent upon them, or would have left their children. The policy was established that no one who had anyone dependent upon her pay as a member of the Women's Army Auxiliary Corps should be enrolled, and also that no one would be taken whose absence would deprive a child of parental care which it was accustomed to receiving. For these reasons many otherwise excellent candidates had to be rejected.

The same disposition was made of the applications of a number of "specialists," persons of outstanding ability in some particular line of work who were performing much needed service to their profession, and who, it was felt, were contributing more to their country in their present capacities than they would as officers in the W.A.A.C.

The 18 representatives of the Director then went directly to

Washington, taking with them the records of the 160 cases from each Corps Area (80 from each of the two boards) who made up the upper two-thirds of the groups interviewed. A three-day conference was held at W.A.A.C. Headquarters during which the records were again reviewed in collaboration with a specially appointed group of psychiatrists. Each case was then given a final rating. Four hundred and forty women were chosen to go to the opening session of the W.A.A.C. Officer Candidate School at Ft. Des Moines, Iowa. Others were accepted for training as officers but their admittance to the camp had to be deferred until a later date because of limited facilities. Those who were rejected as officer material were given the privilege of enlisting as auxiliaries. Since all future candidates for officer's training will be chosen from the ranks, those who were not selected at this time will still have an opportunity to earn an appointment later on if they enlist as auxiliaries. It is noteworthy that an overwhelming majority of them have already signified their intention to do so.

## CONTRIBUTIONS OF THE PSYCHOLOGICAL CORPORATION TO THE WAR EFFORT

BY PAUL S. ACHILLES

*Vice-President and General Manager, Psychological Corporation*

Contributions of The Psychological Corporation to the war effort consist both in the services it renders *as an organization* and those which are rendered by various members of its staff *as individuals*, either wholly or partially apart from their connection with the Corporation. In many cases opportunities for service as individuals arise from this connection, and are furthered by the facilities of the Corporation or by the training and experience previously acquired by the individual in working with the Corporation. Mention of such services by staff members as individuals will be made first. The services and connections of those officers and directors of the Corporation who are not staff members are not included here other than to note the fact that President Walter R. Miles recently returned from a liaison mission to England.

### *Services as Individuals*

Dr. Wallace H. Wulfeck was given full leave of absence from the staff from March 1, 1941, to April 1, 1942. During this period he served as Research Associate on a National Defense Research Committee project for the study of personnel problems related to fire control. Since April 1, 1942, he has continued work on this project on a part-time basis.

Dr. George K. Bennett is serving part-time as a member of the National Research Council Committee on Service Personnel, and of the Committee on Neurotic Inventory. He also served as Consultant to the Secretary of War, and is in charge of the preparation of special materials for both the Army and the Navy under contracts between them and The Psychological Corporation.

Dr. Henry C. Link is serving as Consultant to the State Administration of the Defense Savings Staff on problems connected with surveys of War Bond Pledges.

Dr. Arthur W. Kornhauser, of the Corporation's Chicago office, and Drs. Albert D. Freiberg, George K. Bennett, Margaret B. Erb, Wallace H. Wulfeck, and Mr. Richard A. Fear of the New York office are all devoting outside time to lecturing on personnel procedures, testing, etc., in the E.S.M. War Training Program. Dr. Kornhauser is also serving as Consultant and doing research

on civilian morale problems and public opinion for Chicago Civilian Defense. He is chairman of the Subcommittee on Opinion Studies.

Dr. Sidney Roslow, formerly assisting in the Corporation's Marketing, Industrial, and Test Divisions, is now doing survey work in connection with Dr. Rensis Likert of the U. S. Department of Agriculture.

Mr. Dean Manheimer, M.A., statistician and analyst in the Marketing Division, left the Corporation in January, 1942, to accept a position in the Special Services Branch of the War Department, where he is making contributions toward the study of morale through application of methods and techniques developed in the Corporation's commercial work. Miss Rita O'Neill, another former assistant in the Corporation's main office, is now also engaged in work in the War Department.

Miss Edith Margaret Potts, R.N., M.A., Director of the Testing Service Division for Schools of Nursing, is at the request of the National Nursing Council for War Service making a special study of eliminations from schools of nursing and their causes over a five-year period.

Miss Phoebe Gordon, M.A., Associate Director of the Testing Service Division for Schools of Nursing, is serving on a committee called by the National Nursing Council for War Service to assist in preparing a national pamphlet for recruitment of nurses.

Miss Elizabeth M. Kemble, R.N., Assistant Director of the Testing Service Division for Schools of Nursing, conducted a Red Cross First Aid Course in the Corporation's New York Office, from which some twenty-five members of the staff and office force obtained their qualifying certificates.

In July, Mr. Allan Johnson and Mr. Wayne Bates, both of whom had done advanced work in psychology and were serving as internes in the Corporation's Industrial Division, were given permanent positions in the personnel department of an airplane manufacturing company for which the Industrial Division is serving as consultant.

Four employees of the New York Office are now in military service: Henry C. Lutz, Joseph Reynolds, James MacDonald, and John Van den Broeck.

#### *Services as an Organization*

The activities of the Corporation as *an organization* also con-

tribute in that the services of each of its five nominally separate Divisions are valuable, directly or indirectly, to the war effort.

*Test Division.* The staff of this Division is now engaged in the development, production, and distribution of many tests and materials for military, industrial, educational, and other uses. The importance of these materials merits careful consideration in priority ratings, since proper equipment is essential to the work of psychologists, both in the armed forces and in war production industries. An instance in point is a contract to construct, produce, and supply in quantity three alternate forms of one of the Corporation's tests for use in the Navy. Deliveries on this contract are being made well ahead of schedule. In September, 1941, permission to reproduce certain materials for use in the British Army was granted through the British Purchasing Commission here.

*Industrial Division.* This Division, working in close cooperation with the Test Division, is handling numerous inquiries from industrial concerns regarding employment testing and is rendering consulting services on employment, training, upgrading, and other phases of personnel administration for three aircraft companies and a considerable number of others engaged in war production work.

In appreciation of the services of this Division to one aircraft company, Mr. Richard A. Fear, the staff member serving chiefly on the job, was given a photograph of an airplane being produced, inscribed to him as one who "helped us to turn out more of these faster when they were needed most." In this company, the Division's services included important contributions in testing and interviewing methods applying both to their employment and upgrading procedures. In another airplane company, the Division handled the selection of men for foreign service for specialized maintenance assignments.

In cooperation with the American Management Association, Dr. Paul S. Achilles, acting head of this Division, contributed the chapter on Employment Testing to the Association's volume, "How to Train Workers in War Industries." He also prepared the Employment Procedures Check List and Report Form which was used by the Association in making a survey among over one thousand companies for report at the Association's Annual Personnel Conference in September, 1942. Tabulation of the returns on this survey and preparation of the report are being handled by the Corporation's Industrial Division.

The war effort increasingly demands that all available persons be put to work with the minimum of delays or misplacement. For the purpose of rendering more effective and prompt assistance to companies facing such problems, staff members and assistants in both the New York and Chicago offices of the Corporation have been concentrating for several months on the development and production of a new series of tests and forms especially designed for controlled use in industry. Eleven of these, including four apparatus tests, are now in readiness. Norms are being accumulated and validation studies conducted in a number of companies in which the tests have already been put to use. In this connection it is worthy of note that Dr. Margaret B. Erb of this Division's staff, is pioneering as an industrial consultant regarding women employees; it is hoped that the Corporation may be instrumental in further extending the opportunities in this field for women psychologists. The Industrial Division has also inaugurated publication of an Industrial Service Bulletin in the interest of furthering personnel research.

*Marketing Research Division.* A study of public attitudes toward the purchase of war stamps and bonds was made by this Division in December, 1941, for the Treasury Department.

Indirect contributions to the war effort have been made through a variety of studies conducted without remuneration by this Division as special research projects, as well as by studies made for private industrial clients. These studies may be summarized briefly as follows:

(1) A nation-wide study of public attitudes toward war-time advertising, with particular reference to the effects of advertising on national morale and the contributions of advertisers to the sale of war bonds. This study was a cooperative enterprise initiated by an organization of national advertisers. The results of the study have influenced advertising policies in several large companies, and their effects can be seen in many recent changes in national advertising.

(2) Several large corporations were seriously concerned over workers' attitudes toward labor union policies and practices in a war-time economy. A nation-wide study was conducted among industrial workers to discover their attitudes toward Labor's policies.

(3) In another nation-wide study, measurement was made of (a) public attitudes toward industry's all-out war effort and (b)

knowledge of the public as to probable effects upon the consumer of the changeover to war production.

(4) On its own initiative, the Division conducted a study of public attitudes toward consumer products, with particular reference to rationing, conservation and product substitutes.

*Testing Service Division for Schools of Nursing.* There is no question of the need for nurses, nor of the contribution being made by this Division and the many psychologists cooperating with it as Research Associates, in aiding schools of nursing throughout the country in the selection of candidates for training. In the first seven months of 1942, 8,505 candidates were tested by this Division and reports on each candidate rendered to the respective schools to which they were applying. The figures have mounted steadily, and the efficiency of this Division's staff and office force is indicated by its handling a load of 1,278 cases in May, 1,659 in June, and 1,919 in July without increasing its personnel.

*Clinical Division (Psychological Service Center).* Dr. Rose G. Anderson, Associate Director and staff member devoting full time to this Division, carried a heavy load of cases in June prior to leaving for a summer session teaching engagement at the University of California. The services of the Division are being maintained by other staff members at both the New York and Chicago offices of the Corporation. Of possible significance is an increase in the number of women seeking counsel as to the best application of their abilities in the war effort, and also the visits of several executives concerning personal problems aggravated by the present strain under which they are working in war production.

PERSONNEL WORK IN THE ARMY AIR FORCES:  
THE CLASSIFICATION DIVISION, ARMY AIR  
FORCES TECHNICAL TRAINING COMMAND\*

BY RICHARD W. FAUBION

*Army Air Forces*

AND

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I. INTRODUCTION

The selection problems associated with many of the Air Forces ground crew specialized jobs are quite complex and offer a real challenge to military personnel psychologists. Essential to an effective air arm are well qualified ground crew specialists. These specialists, trained for the numerous duties of maintenance, repair, air photography and communications, are as essential as well qualified pilots, bombardiers, and navigators who comprise the air crew. The selection, classification, and training of these specialists is the responsibility of the Air Forces Technical Training Command. The number and variety of these specialists are far greater than that of the several air crew classifications. For each air crew member in Air Forces combat units, several ground crew specialists are required.

The Army Air Forces Technical Training Command has developed along with the other activities of the Air Forces and with the growth of air power. The Army Air Forces Technical Training Command had its inception in October, 1917, when it was known as the Enlisted Mechanics Training Department. Later it was designated the Air Service Mechanics School. Early in its history the value of scientific personnel selection was recognized. Tests were adopted (e.g., Army Alpha) and developed (e.g., Shop Mathematics); tests and interviewing procedures were administered by its Trade Test Department. This department also had supervisory responsibility over classification procedures. Several articles (3, 4, 5, 6) outline research projects in the development of techniques for the selection of Air Forces specialists performed before the recent expansion of the activities of the Command. In January, 1942, coincident with the beginning of war expansion of

\* Carlton Wilder, Ralph D. Norman, Gene A. Waller, Earle A. Cleveland, Wendell L. Gray, and Charles P. Sparks are among the research workers of this Division who have contributed to one or more of the studies summarized in this report.

the Air Forces, this department became known as the Classification Division of the Command.

While specific figures pertaining to inflow of trainees to schools cannot be given for military reasons, the number of trainees that was graduated from one of the score of Air Forces Technical Schools last month was considerably greater than that graduated from any one of our largest universities last June. The volume of applicants thus far selected and classified as Technical School ground crew trainees comprises more than half a million men.

The Division has during the past several years drawn freely from the advisory services of Expert Consultants appointed by The Secretary of War and members of the National Research Council Committee on Classification of Military Personnel; on test and occupational information from the Personnel Procedures Section\* of the Adjutant General's Office; and on civilian and military occupational analyses from the Occupational Analysis Section of the United States Employment Service.

It is the purpose of this article to present a picture of the psychological phases of the work of the Classification Division of the Command by describing: the courses of instruction and entrance requirements; the organization of the Division, its control of field activities, and its technical personnel; the psychological problems encountered and methods of test verification; tests in use; and typical research performed.

## II. THE TRAINING COURSES AND ENTRANCE REQUIREMENTS

At the present time the primary objective of the Command is to instruct trainees in a score of courses. The schools are located at a number of places throughout the country. The courses are:

### *Basic Courses:*

Airplane Mechanics	Electrical Specialists
Radio Operators and Mechanics	Photographers
Aircraft Armorers	General Clerks
Machinists	Welders
Metal Workers	Parachute Riggers
Teletype Operators	Weather Observers
Power Turret Maintenance Specialists	Bombsight Maintenance Specialists
Link Trainer Operators	

\* Recently the name of Personnel Procedures Section was changed to Classification and Enlisted Replacement Branch. Its Personnel Research Section, responsible for development and use of all classification techniques in Reception Centers, is directed by Major Marion W. Richardson.

*Advanced Schools:*

Power Plant Specialists

Aircraft Instrument Specialists

Weather Forecasters

Propeller Specialists

Radio Code Specialists

The first three basic courses listed require slightly over 80 per cent of the total inflow of trainees. The last five items in the list are advanced or post-graduate schools. Trainees for these schools are drawn from among the more successful graduates of certain of the other courses.

A secondary responsibility of the Command is the selection, classification, training, and assignment of statistical officers, administrative officers, and the training of a variety of technicians in various factories; for example, factories for the manufacture of power turret, aircraft gunnery, and bombsight equipment.

Entrance requirements generally consist of minimum levels of performance on tests (to be described on the following pages) although certain experience and previous training as determined by interview are required for some of the courses. For the airplane mechanics course, experience of applicants is helpful in manual training, cabinet making, gasoline engine overhaul, airplane overhaul and assembly, including rigging and repair, general automotive work, machinist work, and toolmaking. Experience as a munition worker, machinist, gunsmith, locksmith, armorer, gunner, typewriter repair worker, or instrument repair worker may be conducive to success in the Armorer School and in the Aircraft Armorer's job duties. Some applicants may by-pass the schools if the interview and employment record show intensive training and adequate experience in civilian counterpart occupations directly related to the military Air Forces specialty occupation.

At the present time all Air Forces Technical School trainees are drawn from inductees after they have spent several days at one of the numerous Reception Centers (2). At this Center they have been given the Army General Classification Test, a Mechanical Aptitude Test, a Clerical Aptitude Test, and have been interviewed to aid in determining the branch of the Service in which the recruit should yield greatest usefulness in combat or related duty. Allotments for the Air Forces Technical Schools are shipped from these centers directly to the Army Air Forces Replacement Training Centers for preliminary training and further classification.

At these replacement training centers the trainees are given a comprehensive interview and a battery of aptitude tests. On the basis of these results the trainees are selected and classified for specialized work or training in one of the 15 basic ground crew courses listed above. The construction, validation, and use of the batteries of aptitude tests employed in the replacement centers will be considered in Section IV below.

### III. ORGANIZATION AND PERSONNEL OF THE CLASSIFICATION DIVISION

*Organization.* The organization of the Classification Division is flexible because of necessary shifts in plans and policies of the Command, and the rapid expansion of the classification program necessitated by greatly increased inflow of trainees. A statement of the functional organization of the Division will aid the reader to interpret methods and procedures used in the field control of classification activities. The work of the Division is adapted to the goal of accomplishing the classification objective with a minimum of lost motion and in such a manner as to enable fixing the responsibility for action. The Division is functionally broken down into three group activities: administration, operations, and methods.

The administrative group activity combines responsibility for plans, policies, and integration of all activities of the Division with the responsibility for accomplishing coordination of plans and policies with all related agencies both inside and outside of the Command and is responsible also for all of the work accomplished within the Division itself.

The operations group activity is responsible for the preparation of statistical reports pertaining, for example, to the inflow and processing of recruits in the field stations; preparation of the Classification Division Bulletins and other publications and releases designed to inform field offices and interested individuals of the activities and methods used by the Division; coordination of activities of personnel technicians and classification officers in the field; participation in formulation of plans and policies for research and establishment of standards with particular reference to articulation of investigations to be undertaken with available technical facilities.

The group activity pertaining to methods is the third unit of the Classification Division. In this group the plans for the devel-

opment of classification tools, and completion of research in construction, verification and refinement of all such classification devices are performed. In addition to the test construction, this group makes field situation analyses for the purpose of performing test validation, obtains data derived from experimental use of tests and other classification techniques, obtains criterion data by directive or by tours of duty in the field stations, and accomplishes statistical analyses of such data as required for continuous verification of the differentiating power of the techniques used in the field. It obtains data resulting in the establishing of norms for the tests, sets up conversion tables for the transmutation of raw test scores into standard scores, and advises the operations group on preparation of manuals and directions for the administration, interpretation, and recording of classification data secured in the field. It also prepares reports on test development and research, and maintains all files relative to test research activities. The group acts in a consulting capacity to the other two groups of the Division, to other offices of the Command and to military authorities outside of the Command; and aids them in developing plans, policies, procedures, and standards for the procurement and classification of recruit trainees for the various Air Forces Technical Training Schools.

*Personnel.* The personnel now employed in investigations in military psychology for the Classification Division may be divided into two parts. The first comprises a group of professional workers, civilians and officers, employed in the Headquarters office of the Command. At the time of this writing this group consists of four officers and a total of eleven professional workers including four Junior Personnel Technicians, four Assistant Personnel Technicians, one Associate Personnel Technician, one Personnel Technician, and one Principal Personnel Technician. The second group of research workers serve the various Replacement Training Center locations of the Command. At the present time, in addition to commissioned officers detailed to classification duties, five Assistant Personnel Technicians are conducting investigations at these field stations similar to those that are summarized in Part VI of this report.

The qualifications in terms of specific technical training and experience of professional investigators, both commissioned officers and civilians, follow in general the qualifications as set forth in the United States Civil Service Commission announcement for

positions of the various grades of Personnel Technician positions that was distributed by the United States Civil Service Commission in September, 1940.

The Division's specifications of minimum requirements for Assistant Personnel Technicians are:

*Training.* Four years college work with a major in psychology or psychometrics including a minimum of 10 semester hours in courses in mental measurement in which experience in actual test administration was received, and a minimum of 6 hours in statistics of tests and other personnel measurements. In addition to this training applicants for these positions must have had one year of graduate training in an institution granting graduate degrees in psychology with major field of specialization in psychometrics or personnel psychology including test construction, administration, theory, the statistical analyses of test data and training in interview and rating scale techniques with practice in the use of such tools.

*Experience.* Two years of full-time paid experience of a responsible, professional nature, in investigations of problems involving classification or selection of personnel or in the administration of classification systems including study of personnel data and application of tests and other techniques for personnel measurement. One year of graduate training in addition to that required to fill the requirement of training indicated above may be substituted month for month up to a maximum of one year for a portion of the experience requirements. Examples of kinds of experience desired in the order of their desirability are:

1. Personnel research in industry or governmental agencies in which classification is performed by means of psychological techniques.
2. Director or Assistant Director or responsible experience in a student personnel bureau in a large college or university.
3. A responsible position in Federal Government or Civil Service or in a large educational testing agency in which psychological techniques are used to appraise and evaluate applicants for their selection, classification, or admission.
4. College teaching in the field of testing, statistical analyses of psychological test data, business or industrial psychology with research performed in one or more of these fields.
5. Part-time duty as consultant in problems of personnel classification in a governmental agency or industrial or commercial organizations is desirable.

Duties of Assistant Personnel Technicians in the Headquarters of the Command consist of test construction; analysis of personnel data forwarded to the central office by the workers in the field; the preparation of editorial writeups and summary reports; the collation of minor studies conducted and reported by field workers with a view to improvement of testing techniques and personnel procedures used in the service field locations; and under super-

vision the preparation of bulletins and manuals for use by technicians in the field to insure proper and uniform test administration, recording and interpretation of data. Duties may also include the preparation, under supervision, of drafts and directives establishing personnel standards and procedures in the field operating stations.

The duties of the Assistant Personnel Technician field investigators are to: assist school directors and authorities in studying and establishing methods of evaluating school success of trainees with a view to improvement of objectively measured criteria of attainment and improvement of methods for elimination of academically deficient students; work with Records Section heads to study difficulties involved in test score and criterion record keeping, and aid school instructors in meaningful interpretation of test results; study and improve methods of instruction by working with instructors for the purpose of informing them of basic principles in economy of learning as experimentally determined by educational psychologists; perform job analyses and curriculum analyses with a view to the use of workable shortcuts in attainment of desired outcomes of instruction; study operating procedures for recruit classification with a view to their improvement; prepare reports on the several items indicated above for use in establishing policies and standards by the Classification Division, Army Air Forces Technical Training Command.\*

#### IV. PSYCHOLOGICAL PROBLEMS AND METHODS OF TEST VERIFICATION

The program of the Division requires adequate classification of men for a number of different kinds of training. This fact requires a different approach from that conventionally used in selection of men for a single job. Classification, or differential selection, necessitates a larger number of tests and more detailed work in training and job analysis than is ordinarily the case in selection programs. Experiments designed to secure validity information is made more difficult than is usual in selection problems.

Conventional experimental designs are inadequate. A test or battery may appear valid or may be found valid for selecting for one course of instruction, but it may not be known how well this

\* Inquiries relative to position vacancies in the Classification Division will be addressed to the Commanding General, Air Forces Technical Training Command, Knollwood Field, N. C.

battery will work in differential selection. The optimal tests and test score weights for screening and sorting for a number of occupations or courses cannot be verified by conventional test-criterion analysis. The classification program requires an approach in which the following procedures are basic:

1. *Training curriculum and occupational analyses.*

- To determine common psychological characteristics which courses require of trainees.
- To determine common psychological characteristics which job assignments undertaken by graduates require of specialists.
- To determine the differential psychological characteristics which courses require.
- To determine the differential psychological characteristics which jobs require.

2. *Test construction for a number of test forms.*

Preliminary item construction. Based on curriculum and job analyses, items for tests for any specific course or job are designed to test for characteristics peculiar to that course or job alone, and not common to the other courses or jobs.

Item editing. Items are edited by subject matter experts to aid obtaining items as specified in the preceding paragraph.

Item analysis, item selection, scaling.

Reproduction of tests in quantities for experimental use.

3. *Preliminary verification of tests.*

Administration to experimental populations.

Analysis of test data for reliability.

Establishing criteria of success in the schools.

Analysis of test data for validity.

Establishing conversion tables for converting raw scores to standard scores.

Establishing critical standard score levels.

4. *Verification of tests to determine stability.*

Repeating verification on successive samples to determine sustained validity.

5. *Preparation of manuals for uniform use of the tests in the Replacement Training Center field locations.*

6. *Continuous followup to enable revision of the tests in terms of changes in course requirements and revision of minimum standard score levels in terms of large changes in test measured levels of inflow populations.*

## V. TESTS IN USE

The test scores obtained in the Reception Centers follow the men to the Air Forces Replacement Training Centers where additional tests are given. The men come to the Replacement Training Center with their qualification cards on which the preliminary classification test scores have been entered at the Reception

Center. In addition to interview data, standard test scores on the General Classification Test, Mechanical Aptitude Test, and Clerical Aptitude Test are entered on this qualification card. These data are supplemented by additional interview and test information collected in the Replacement Training Center, and the men are routed to the schools for training in specific courses on the basis of this information. All tests are machine scored. The tests now in most common use in Army Air Forces Replacement Training Centers are indicated in Table I.

TABLE I  
TESTS IN USE

Test	Form	No. of Parts	Total No. of Items	Time Limit Minutes	Course for which Minimum Scores are Used
Gen. Classification	1a	1	150	40	All basic courses
Gen. Classification	1b	1	150	40	All basic courses
Gen. Classification	1c	1	150	40	All basic courses
Gen. Classification	1d	1	150	40	All basic courses
Shop Math	5-R-I	1	20	120	One of the four forms used for
Shop Math	5-R-J	1	20	120	all basic courses except Radio
Shop Math	5-R-K	1	20	120	Operator; minimum scores dif-
Shop Math	5-R-L	1	20	120	fer for different courses
Surface Develop- ment	6-R-C	1	72	20	Sheet Metal Workers Aircraft Welders
Surface Develop- ment	6-R-D	1	72	20	Parachute Riggers Photographers
Mechanical Move- ments	6-R-E	1	67	20	Same as Surface Development
Clerical	7-R-B	5	140	41	General Clerks
Weather	9-R-A	2	134	52	Weather Observers
Radio and Link Trainer	11-R-A	2	294	70	Link Trainer
Mechanical Infor- mation	14-R-A	1	100	30	Radio Operator and Mechanic
Radio Code	Phono- graph	1	78	9	Radio Operator and Mechanic

In addition to the tests listed in Table I, the following are used in Replacement Centers for research purposes for item analysis; for the determination of reliability; for development of norms, standard scores, and conversion tables; and for determination of validity in classification.

Series of 1-R (11 forms)—general scholastic aptitude	Mechanical Information Exp. 9 & 10
Mathematics TM-IRE	Mechanical Information (AGO-MA-2)
Signal Corps Code Aptitude Test	Mechanical Comprehension (MC-2)
Code Learning Test	Weather Forecasters Entrance Examination
Substitution Test (Adj. Gen. Office-X-1)	Gottschaldt Figures—Thurstone
Mechanical Aptitude (AGO-MA-1)	Scattered X's—Thurstone
Biographical Inventories BI (series 2 through 10)	Physics Test TP-4 RE
Selection and Classification Test 6-R-A	Officer Candidate Test OC-3a
Technical Reading Comprehension Exp. 3 & 4	Pursuit Test Exp. 1
Code Rhythm Exp. 6	Technical Vocabulary Exp. 5
	Mathematics Exp. 7 & 8

#### VI. TYPICAL PERSONNEL INVESTIGATIONS

The research results of the Division are filed by projects undertaken. Most of them are current, since constantly changing instruction curricula necessitate periodic revision of classification tools. Several of the projects have been selected on the basis of their general interest, and will be summarized below.

*Study of failing trainees at Aircraft Armament School (Project No. 16-1941).* In this study a population of 689 aircraft armament trainees were used as subjects. Of the 689 students who entered the course, 28 per cent were eliminated for failure in practical or academic examinations.

Columns 1, 2, and 3 of Table II contain results pertaining to comparison of Army General Classification Test\* standard scores for eliminated and passing aircraft armament students. This test is designated A.G.C.T. in the table. It may be noted that all of the ten students who had standard scores of less than 100 failed the course. The wash-out rate dropped sharply with increasing Army General Classification standard scores. It decreased from

\* Developed by Classification and Enlisted Replacement Branch (formerly called Personnel Procedures Section) of the Adjutant General's Office. This test is discussed in (1).

TABLE II

COMPARISON OF GENERAL CLASSIFICATION TEST AND SHOP  
MATH STANDARD SCORES WITH ELIMINATION  
RATES OF ARMAMENT TRAINEES

<i>A.G.C.T. Standard Score</i>	<i>N</i>	<i>Per Cent Washing Out</i>	<i>Math. Standard Score</i>	<i>N</i>	<i>Per Cent Washing Out</i>
86- 87	1	100.0	60	12	75.0
88- 89	0	100.0	64	11	45.5
90- 91	2	100.0	68	16	62.5
92- 93	0	100.0	72	25	40.0
94- 95	2	100.0	76	60	48.3
96- 97	3	100.0	80	42	33.3
98- 99	2	100.0	84	57	40.4
100-101	25	40.0	88	66	45.5
102-103	29	48.3	92	61	27.9
104-105	37	35.1	96	53	18.9
106-107	35	37.1	100	49	18.4
108-109	51	47.1	104	35	25.7
110-111	42	40.5	108	40	5.0
112-113	37	40.5	112	23	17.4
114-115	50	24.0	116	27	7.4
116-117	36	22.2 <sup>a</sup>	120	26	3.8
118-119	50	30.0	124	41	14.6
120-121	48	33.3	128	11	0.0
122-123	50	16.0	132	11	0.0
124-125	39	17.9	136	8	0.0
126-127	19	15.8	140	12	0.0
128-129	28	7.1			
130-131	20	5.0	No Record	3	
132-133	13	7.7			
134-135	12	8.3			
136-137	25	8.0			
138-139	7	14.3			
140-141	10	0.0			
142-143	9	0.0			
144-145	3	0.0			
146-147	1	0.0			
148-149	1	0.0			
150-151	0	0.0			
152-153	1	0.0			
154-155	0	0.0			
156-157	1	0.0			
Total	689		Total	689	

40 per cent for standard scores of 100 or 101 to 0.0 per cent for scores of 140 and above.

Columns 4, 5, and 6 of Table II show the relation between Shop Math test standard scores and washout rates. It is revealed that, of the 289 trainees that had obtained Shop Math test standard scores of less than 90, 45 per cent washed out, as compared to 28 per cent for the entire group. As was the case for Army General Classification Test standard scores, the washout rate decreased with increasing proficiency on Shop Math test. The elimination rate decreased from 75 per cent for Math test standard scores of 60 to 0.0 per cent for Math test standard scores of above 124. Over 50 per cent of the eliminees had scores of less than 88, and 25 per cent of the successful students had scores less than that figure.

In Table III the relation of age and order of preference for the course to the criterion of failure-success is presented. Columns 1, 2, and 3 of this table show these relations for the age variate. The ages of the students ranged from 18 to 36, with more than 50 per cent of the trainees 21 years of age or less. There was no appreciable tendency for either the younger or older students to succeed more frequently in the training for aircraft armorer.

When interviewing the trainee in the Replacement Training Center, he was asked for his relative preference for the courses. This order of preference was entered on a form arranged to provide a record of this information. Directions for obtaining his order of preference were "The following courses of instruction are offered by the U. S. Air Forces. Indicate by number—1, 2, etc.—the order of your preference. Fourteen courses are listed."

Columns 4, 5, and 6 of Table III suggest that order of preference for the course appears to be closely related to the washout-success criterion. For 624, or 91 per cent of the trainees, armament was either the first or second choice of courses. The elimination rate tended to increase sharply from 25 per cent for the men whose first choice was armament to 100 per cent for the men whose fourth choice of training was armament.

The recommendations regarding personnel practices that seemed reasonable as a result of the findings of this project included the suggestion that students whose order of choice is not either first or second for this course should not be entered.

*Validity of interview technique in estimating typing proficiency (Project No. 9-1942).* One of the entrance requirements for the

Air Forces clerical school is training or experience in typewriting. The problem of getting typists into the Clerical course involves determining which of the recruits passing through Replacement Training Centers are qualified typists. Because of shortage of time and facilities, the large volume of men being processed, and the

TABLE III  
COMPARISON OF AGE AND ORDER OF PREFERENCE WITH  
ELIMINATION RATES OF ARMAMENT TRAINEES

<i>1</i> <i>Age</i>	<i>2</i> <i>N</i>	<i>3</i> <i>Per Cent Washing Out</i>	<i>4</i> <i>Order of Preference</i>	<i>5</i> <i>N</i>	<i>6</i> <i>Per Cent Washing Out</i>
18	110	30.0	1	483	25.1
19	97	26.8	2	141	24.1
20	63	36.5	3	14	42.9
21	102	31.4	4	2	100.0
22	95	21.1	5	1	100.0
23	66	22.7	6	2	100.0
24	48	20.1	7	0	
25	42	21.4	8	3	100.0
26	18	38.9	9	1	100.0
27	19	31.6	None	42	54.8
28	3	33.3			
29	5	20.0			
30	4	25.0			
31	3	66.7			
32	3	0.0			
33	0	—			
34	1	0.0			
35	2	100.0			
36	1	0.0			
No record	7	71.4			
Total	689		Total	689	

intensive schedule in effect at the Centers, it is not considered practicable to give typing proficiency tests to all trainees.

A second method is used of arbitrary standards of training, experience, or performance, as derived from the recruits' own statements given in the interview. Before such standards could be applied, it was necessary to know the number of typists in the recruit population flowing through the Replacement Training Centers, their degree of proficiency, and also how much faith may be placed in the interviewing technique by which the recruits' estimates of typing speeds are obtained.

Surveys were conducted on representative groups of recruits passing through several Air Forces Replacement Training Centers. Each man was requested to give the following information: (1) amount of formal academic training in typing; (2) length of experience in a civilian position as a typist; (3) the number of words per minute which the individual soldier estimated as his "present typing speed."

In addition to the information elicited above, a study of the actual typing skills of those who claimed any typing proficiency was made. Correlations were computed between the claimed and actual typing speeds. Many of the men had not typed for some time and were out of practice. Many of them typed rapidly but made so many errors as to receive low scores. A few hours or days of practice might have had some effect upon the correlations reported here.

Table IV shows the amount of typist training reported by recruits at three Replacement Training Centers. Table V shows the amount of typing experience reported by the same groups.

TABLE IV  
YEARS OF ACADEMIC TYPING TRAINING

Station	N	Years of Training					
		None	0-1	1-2	2-3	3-4	Over 4
X	629	471	107	40	4	1	6
Y	467	377	44	43	3	0	0
Z	495	409	29	19	24	14*	—
Total	1,591	1,257	180	102	31	15	6
% of Total	100.0%	79.1%	11.3%	6.4%	1.9%	.9%	.4%

\* 14 men reported with training of "3 years or more."

It will be noted from the per cent row of the table that 4 out of 5 men claimed no formal training of any kind. Only 9.6 per cent had as much as one year of academic instruction in typing.

Nine out of ten of the 1,591 men in this study reported no typing job experience in civilian life. Only 6 per cent claimed one year or more of such experience.

The personnel technician at Station X reported that, after eliminating those individuals who have never had typing training, the average number of months of training was approximately 14. Eliminating those who claim no typing experience, the average

TABLE V  
YEARS OF TYPING EXPERIENCE  
*Years of Experience*

Station	N	Years of Experience					
		None	0-1	1-2	2-3	3-4	Over 4
X	629	548	52	9	11	3	6
Y	467	429	10	11	5	6	6
Z	495	439	18	10	8	20*	—
Total	1,591	1,416	80	30	24	29	12
% of Total	100.0%	89.0%	5.0%	1.9%	1.5%	1.8%	.8%

\* 20 men reported with experience of "3 years or more."

number of months or job experience was approximately 19. Only about one-half of those who had typing training appear to have subsequently used this training as a part of their civilian job experience.

Each man in these groups was asked to estimate the number of words per minute he thought he was capable of typing at the time he was classified. These self-estimates, for the three stations, are shown in Table VI.

TABLE VI  
SELF-ESTIMATES OF RECRUITS' TYPING SPEEDS

Estimated Speed	Station X	Station Y	Station Z	Total	Per Cent of Total
80 W.P.M.	0	—	1	1	.1
75 "	1	—	0	1	.1
70 "	0	—	1	1	.1
65 "	2	—	0	2	.1
60 "	3	—	0	3	.2
55 "	0	11*	4	15	.9
50 "	6	11	5	22	1.4
45 "	6	8	2	16	1.0
40 "	20	31	11	62	3.9
35 "	13	17	6	36	2.3
30 "	27	26	15	68	4.3
25 "	21	11	11	43	2.7
20 "	28	7	17	52	3.3
15 "	16	2	10	28	1.8
10 "	7	1	10	18	1.1
5 "	0	0	2	2	.1
0 "	479	397	342	1,218	76.6
Total	629	522	437	1,588	100.0

\* 11 men reported with estimated typing speeds of 55 or more.

For the 150 men at Station X who claimed some typing proficiency, the mean estimated speed was 29.43 words per minute. The average estimated speed for the 95 men at Station Z who could type was 28.3. Three-fourths of all the men studied asserted that they could not type at all. About 15 per cent of the men claimed that they could type at a speed of 30 words per minute or better, this speed being the minimum desired speed for clerical students upon entering the course.

One of the most interesting aspects of this study pertains to validity of the interview. How does the claimed speed check with the actual speed? It was possible to recall some of the men who stated they could type, and to administer 10-minute speed tests. Net speeds were computed by the standard method of dividing the number of strokes by five to secure gross number of words typed, subtracting 10 for each error, and dividing by the number of minutes allowed for the test. Net speeds for 161 men tested at Stations X and Z are portrayed in Table VII. Examinees at Station Z were allowed three minutes' practice before taking the test.

TABLE VII  
NET SPEEDS OF 161 RECRUIT-TYPISTS

<i>Net W.P.M.</i>	<i>Station X</i>	<i>Station Z</i>	<i>Total</i>	<i>Per Cent of Total</i>
65-69	0	1	1	.6
60-64	0	0	0	0.0
55-59	1	1	2	1.2
50-54	1	0	1	.6
45-49	1	1	2	1.2
40-44	3	5	8	5.0
35-39	3	7	10	6.2
30-34	3	10	13	8.1
25-29	4	5	9	5.6
20-24	5	10	15	9.3
15-19	8	10	18	11.2
10-14	11	21	32	19.9
5- 9	9	8	17	10.6
0- 4	17	16	33	20.5
Total	66	95	161	100.0

It will be noted that, using a speed of 30 words per minute as an arbitrary proficiency level, only about 23 per cent of the men who claimed some degree of typing proficiency could be considered

as potentially satisfactory for admission to the clerical course. If this figure is generalized to all of the cases who claimed to be typists, about 5 per cent of all of the 1,585 men interviewed could type at a rate of 30 words per minute or more. Thus, the best estimate is that probably only about 5 per cent of all men classified at Replacement Training Centers were typists who had speeds of 30 words per minute or more.

If resort is to be made to judging proficiency on the basis of the recruits' own statements, the matter must be investigated of how well self-estimated typing speeds are related to actual typing speeds, and how much over- or under-estimate of speeds exists. At Station X a Pearsonian coefficient of correlation was computed between self-estimated and actual net speeds. The coefficient, for 66 cases, was .485, indicating only a fair degree of association. A similar coefficient of .578 was computed for the data received from Station Z, based on 95 cases.

In connection with the amount of over- or under-estimate entering into assertions regarding typing proficiency, Table VIII is presented.

TABLE VIII  
COMPARISON OF AVERAGE SELF-ESTIMATED AND  
ACTUAL TYPING SPEEDS

<i>Station</i>	<i>N</i>	<i>Mean Actual</i>	<i>Mean Estimated</i>	<i>Difference</i>
X	66	16.1	30.6	14.5
Z	95	18.9	28.3	9.4

It is seen that at both stations a tendency to over-estimate typing speeds was apparent. At Station X, 59 of the 66 typists claimed speeds which exceeded actual performance. This study, of course, cannot indicate whether this unreliability of self-estimated speed is intentional. Another possible contributing factor was the probable tendency for the individual to indicate the highest speed which he had attained while undergoing intensive academic typing instructions; a natural decline in typing speed, unless typing had continued up to the time of military induction, would be expected.

Several deductions of practical value to the Air Forces clerical schools resulted from the study. If typing proficiency tests cannot feasibly be employed, and if clerical students must be selected partially on the basis of self-estimated typing speeds, some allow-

ance must be accorded the differences between claimed and actual typing speeds. At the same time the minimum acceptable estimated speed must not be set so high as to exclude all but a few students as quota requirements for the school must be met. The average over-estimate in subjectively judging one's typing speed ranged from 9 to 15 words per minute for the above groups. The results are of interest that might obtain for a minimum typing speed 15 words per minute higher than the established standard of 30 words per minute. The following table shows the results of using a self-estimated speed of 45 words per minute as a standard for the 161 typists studied at Stations Z and X:

TABLE IX

EFFECTS OF EMPLOYING A SELF-ESTIMATED TYPING SPEED  
OF 45 WORDS PER MINUTE AS A STANDARD FOR  
SELECTING CLERICAL STUDENTS

Station	Number of Typists	Total with Est. Speeds of 45 W.P.M. or More	Est. 45 W.P.M. or More Actually 30 W.P.M. or More	Est. 45 W.P.M. or More Actually Below 30 W.P.M. or More
X	66	11	5	6
Z	95	13	9	4
Total	161	24	14	10

From the above table it may be seen that of 161 men claiming typing proficiency, 24, or 14.9 per cent, assert that they were able to type at a rate of 45 words per minute, or better. Of these 24, 14 were able to exceed 30 words per minute. Ten could not pass the test with a minimum speed of 30 words per minute. The chances are, then, that in assigning to the clerical course 100 men like these who claim a typing speed of 45 words per minute or more, about 60 would probably be able to type at a rate of 30 words per minute or more without further training. Although the remaining 40 would be below this critical mark initially, it is likely that a brief review would raise their speeds to the desired minimum level. As only 61 men in the original group of 1,588 stated that they were able to type at a rate of 45 words per minute or more, this suggests that about 3.8 per cent of all recruits received at Replacement Training Centers could be expected to have estimated typing speeds at this level, provided future recruit ship-

ments were comparable to those men included in this study. It was determined that this percentage of the total inflow of trainees would supply a sufficient number of clerical trainees.

*Analysis of marginal recruits (Project No. 13, 1942).* The following summary of results of one of several related studies performed by the Classification Division is of a study made on a group of 500 recruits who scored in the lowest five per cent on the Army General Classification Test. These marginal recruits offer serious problems to the military psychologist: some are problem cases, few can be trained as specialists, some already possess skills valuable to the armed forces. The basic objectives are classification and training for maximum utilization of such aptitudes and skills as these recruits possess.

The sample of 500 marginal recruits was given a non-language test. The scores on this test were analyzed in relation to chronological age, years of schooling, years out of school, civilian occupation, and possession of occupational specialties of value to the Air Forces.

The relation of non-language test standard scores of this selected group to chronological age is shown in Table X.

TABLE X  
PERCENTAGES OF EACH AGE GROUP FALLING IN EACH  
STANDARD SCORE STEP INTERVAL

Age	Non-Language Test Standard Score				Total
	110 to 138	90 to 109	70 to 89	40 to 69	
18 to 20	4.41	4.42	0.78	0.53	2.00
21 to 28	63.24	42.48	45.74	31.58	42.00
29 to 35	29.41	40.71	41.08	51.58	43.40
36 to 44	2.94	12.39	12.40	16.31	12.60
Total	100.00	100.00	100.00	100.00	100.00

There was some tendency for those who placed in the lowest standard score group on the non-language test to be older men. Table X shows that 68 per cent of those in the lowest scoring group were 29 years of age or older, whereas only 32 per cent of those of the higher scoring men were 29 or over.

The men who had received more schooling tended to make better non-language test scores. Only 40 per cent of those who were in the lowest standard score group had received more than

seven years of schooling; this may be contrasted with the fact that 63 per cent of those in the higher non-language standard score group had received eight or more years of schooling.

The number of years out of school also seemed to be related to non-language test scores. Of the lowest scoring group, 64 per cent had been out of school for 16 or more years, while for the highest scoring group, only 21 per cent had been out of school longer than 15 years.

Among the most interesting and important findings of the study are those reported in Table XI. This shows percentages of the total group of men for each of three non-language test standard score intervals who had held various kinds of civilian occupations. The major occupational groups of the United States Employment Service occupational classification structure were employed in the grouping of job titles. Since none of these 500 selected men had been members of professional, semi-professional, managerial or official occupations, and two other occupational groups, these are not included in the table.

TABLE XI  
PERCENTAGE OF MEN IN THREE NON-LANGUAGE STANDARD SCORE GROUPS BY CIVILIAN OCCUPATIONAL CLASSIFICATION

<i>Occupation</i>	<i>Non-Language Standard Score</i>			<i>Total</i>
	<i>110 to 138</i>	<i>70 to 109</i>	<i>40 to 69</i>	
Clerical and Related	1.47	0.41	0.00	0.40
Sales and Related	0.00	1.24	1.58	1.20
Domestic Service	0.00	0.00	0.00	0.00
Personal Service	1.47	2.89	2.11	2.40
Agricultural and Related	19.12	33.06	40.53	34.00
Skilled	20.59	22.73	18.42	20.80
Semi-skilled	36.76	16.53	12.61	17.80
Unskilled	20.59	23.14	24.74	23.40
Total	100.00	100.00	100.00	100.00
	68	241*	190	499*

\* One recruit had no previous work experience.

It will be noted that over 95 per cent of the entire selected group of recruits were classed as skilled, semi-skilled, or laborers of one kind or another, or were farmers and farm hands. The percentage of unskilled laborers and farmers increased consistently

as the non-language test scores decreased. It would appear that those of lowest mental ability tend to be unable to get beyond a simple type of occupation. Although it is not shown in the table, the data reveal that a large number of the group classed as unskilled laborers had a record of many different jobs and a large amount of unemployment.

One of the more significant results of the study from the viewpoint of military psychology was the proportion of these low grade, marginal men who possessed specialized training of such a nature as to enable them to contribute their skills acquired in civil life to combat or other Air Force units without additional Air Force technical training. It will be recalled that the sample of 500 men studied were selected as being the lowest 5 per cent on the Army General Classification Test received at a certain Replacement Training Center.

Over three-fourths of all "by-passes" (those who do not require Air Force Technical School Training) are either truck drivers or tractor drivers. Truck-driving and tractor-driving are listed as "semi-skilled" occupations by the United States Employment Service Occupational Classification. The other men, with the exception of one Parts Clerk, were "by-passed" in occupations which are listed as "skilled."

Of the total group of 500 who scored among the lowest 5 per cent of the language test, the data reveal that most of the specialists are above standard score of 70 on the non-language test. Only 8 per cent of those below 70 were "by-passed," whereas 23 per cent of those above 70 were assigned to units without formal Air Force Technical School Training.

## VII. SUMMARY

The Classification Division of the Army Air Forces Technical Training Command is organized and staffed with a group of military psychologists for developing and applying personnel techniques designed for classifying and training the groundcrews for the Army Air Forces. The volume of inflow of these trainees to replacement training and Air Forces school centers is great—about 11 ground crew specialists are trained for each air crew cadet graduated.

In the development of personnel tests and related techniques emphasis is placed on: analysis of the characteristics of successive populations of trainees; analysis of training courses and specialist

duties to be performed by graduates; procedures for standard and uniform administration, interpretation, and recording of test and school criterion data; and continuous follow-up studies to check, verify, and refine techniques in use.

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## RADIO BROADCAST ON "PSYCHOLOGISTS IN THE WAR EFFORT"

BY STEUART HENDERSON BRITT

*Executive Director, Office of Psychological Personnel, National Research Council*

"Psychologists in the War Effort" was the subject of a nationwide broadcast on Saturday, July 11, 1942, 1:30 P.M. Eastern War-time, by the Executive Director of the Office of Psychological Personnel. He was the guest speaker on the "Adventures in Science" program, a weekly broadcast over the Columbia Broadcasting System for the past twelve years under the auspices of Science Service. Asked by Watson Davis, Director of Science Service, to describe the activities of the newly created Office of Psychological Personnel, he took the opportunity to tell briefly what psychologists are doing in the war effort.

*Since the material may be of use to other psychologists in our public relations program, the radio script is reproduced below:*

DAVIS: Our guest today is Dr. Steuart Henderson Britt, of Washington, D. C. Dr. Britt is engaged in a great many war activities, and is the Executive Director of the Office of Psychological Personnel located here in Washington. He is going to tell us about the work of psychologists in the war effort. First of all, Dr. Britt, what is this Office of Psychological Personnel?

BRITT: The answer is, Mr. Davis, that the Office of Psychological Personnel is a special office established in Washington, D. C., by the American Psychological Association in cooperation with the National Research Council. In fact, we are located in the building of the National Research Council. The Office of Psychological Personnel was set up to assist psychologists throughout the country on various personnel problems, to give them information about opportunities for service in the Army, the Navy, other branches of the Federal government, and in various research projects. Although the Office of Psychological Personnel is not a governmental agency, we have worked in the closest cooperation with both military and non-military branches of the Federal government on problems directly related to the war effort.

DAVIS: What do you mean, Dr. Britt, when you say that you have worked with these agencies?

BRITT: The Office of Psychological Personnel is charged with the responsibility of "the maximum, effective use of psychologists in the war effort." This means that we have supplied lists of

psychologists and other special information to various war agencies. For example, we have furnished the Adjutant General's Office of the War Department with names of qualified psychologists who are today carrying on classification and personnel work in the Army. Likewise, we have secured factual information for the Office of the Air Surgeon of the Army Air Forces. These same sorts of contacts have been maintained with other branches of both the Army and the Navy.

DAVIS: Do you mean that federal agencies turn to the Office of Psychological Personnel for assistance on psychological problems, Dr. Britt?

BRITT: Yes, Mr. Davis. But I must also point out that the National Roster of Scientific and Specialized Personnel, a governmental agency, has the primary task of supplying names of men and women in *all* scientific and technical fields in connection with the war effort. The National Roster is under the direction of Dr. Leonard Carmichael, internationally known psychologist, and of Mr. James C. O'Brien, Executive Officer. It has recently become a part of the War Manpower Commission, and is concerned with the most effective use of all scientifically trained persons in the national emergency. Fortunately, the Office of Psychological Personnel has direct relationships with the National Roster of Scientific and Specialized Personnel, and is the channel used by the Roster in supplying information to war agencies about psychologists.

DAVIS: This sounds as if you had your hands full.

BRITT: We certainly have, although the real job of carrying on psychological activities is being done by the loyal men and women in the psychological profession who, by the hundreds, have gone into war activities. The Office of Psychological Personnel serves as a kind of "clearing house" for psychological problems, but I must emphasize that the most important tasks are those being performed by the psychologists in uniform, and by others in important civilian posts.

DAVIS: Tell us, Dr. Britt, just what do these psychologists do?

BRITT: Suppose I answer, first of all, by telling what psychologists do *not* do. Psychologists are not highbrow fortunetellers or crystal-gazers, and they don't go around hypnotizing people or asking to interpret their dreams. I'm afraid that is the strange notion some people have about us. Some persons are even

convinced that psychologists must be "queer ducks," or else why would they be psychologists?

Yet actually the three or four thousand psychologists in the United States are practical, hard-headed men and women who have gone through years of rigorous scientific training, and they are at work on some of the most practical problems of human behavior. Psychologists are found not only in the laboratories and the classrooms of the colleges and universities, but also in guidance clinics, in hospitals, in courtrooms, in prisons, in factories, and in market research organizations.

DAVIS: It's not surprising, then, that psychologists are in demand in the war effort.

BRITT: You're quite right. Today the Federal government is the largest single employer of psychologists. Although a number are stationed in Washington, many others are located in other sections of the country, both in military and in non-military capacities. First of all, a great many are engaged in developing and interpreting special psychological tests. These tests are used especially in the armed services. Men must be selected; they must be classified; and then they must be trained. In selection, classification, and training programs psychologists are doing their best to see that the square pegs go into the square holes, and the round pegs into the round holes.

The Adjutant General's Office, the Army Air Forces, and the Air Corps Technical Training Command of the War Department; and the Bureau of Medicine and Surgery, the Bureau of Aeronautics, and the Bureau of Naval Personnel of the Navy Department; these and other military branches are vitally concerned with the correct selection and classification of men. And this is where psychologists have been of very real help with their intelligence tests, their aptitude tests, and their performance tests.

DAVIS: How many psychologists are in the Army and Navy, Dr. Britt?

BRITT: Several hundred. Over fifty psychologists have been commissioned in various branches of the Navy. About two hundred and fifty are serving as officers or are being commissioned in the Army. And I might add that most of these officers have gone through basic military training before receiving their commissions. In addition, a great many young psychologists are serving as enlisted men and non-commissioned officers, carrying on psycho-

logical duties of the greatest importance; and some are serving with combat troops.

DAVIS: You said awhile ago, Dr. Britt, that psychologists are also performing non-military duties.

BRITT: When I said non-military, I meant that they were carrying on psychological activities as civilians. In fact, some of the most important work is being done by men and women *not* in uniform. Significant research projects—especially on problems of perception—are going forward in psychological laboratories throughout the United States. I am not at liberty to describe the research because most of it is necessarily secret in nature, but I am happy to say that much of it is being done at the request of and under the supervision of the War and Navy Departments.

Then there are a great many persons working in the field of social psychology. This includes studies of morale, the measurement of public opinion and attitudes, and the analysis of propaganda. This work is also of a confidential nature, but again I am glad to say that social psychologists, along with other specialists, are making a very real contribution to total war.

DAVIS: Apparently the men in your profession are doing a swell job.

BRITT: Not only the men, Mr. Davis—the women, too. Although the demands in the Army and Navy quite naturally have been for men, the women psychologists are also serving in many ways. Some hold responsible positions advising on war problems, while others have volunteered their services to work in their own communities on local problems of defense and morale.

In this connection, I want to point out that psychologists, both men and women, have *volunteered* their services in ways too numerous to mention. In addition to their regular full-time jobs, a great many have worked long extra hours without pay in the interests of our country. And a great many psychologists began their volunteer work at least two or three years ago, back in the days when lots of people were talking about a "phony war."

DAVIS: It sounds to me as if a fascinating story ought to come out of all this, as to what the psychologists have accomplished in helping to win the war.

BRITT: I wish that story could be told now, but after the war is over there will be a great many things to tell. We can then describe exactly what psychologists have done in the war effort.

And equally important, we can then take stock of all our findings, and I feel sure we will have discovered many new and important developments for the profession of psychology.

DAVIS: We are glad to learn from you, Dr. Britt, about the profession of psychology, and I want to thank you for being with us today.

ANNOUNCER: You have been listening to Dr. Steuart Henderson Britt, Executive Director of the Office of Psychological Personnel, located in the National Research Council, Washington, D. C. Dr. Britt has been interviewed on our "Adventures in Science" program.

## PSYCHOLOGY AND THE WAR: NOTES

In the July, 1942, issue of the *Psychological Bulletin* (pp. 525-528) Selective Service Occupational Bulletin No. 10 was quoted in full. This Bulletin deals with the subject of scientific and specialized personnel, and lists psychology among the critical occupations.

Another release from the National Headquarters of the Selective Service System of interest to psychologists is Memorandum to All State Directors (I-435), dated July 15, 1942. In this Memorandum are listed "essential activities," such as: the production of aircraft and parts; food processing; metal mining; etc. Among the list of essential activities, the following three paragraphs may be of particular interest to psychologists:

*Health and welfare services, facilities and equipment:* Water supply and sewerage systems; irrigation systems; dental and medical laboratories; hospitals; nursing services; fire and police protection; public health services; weather services; coast and geodetic services; engineering and other testing laboratories; offices of dentists, physicians, surgeons, osteopaths, chiropodists and veterinarians; professional engineering services. Includes also the manufacture of X-ray and therapeutic apparatus, and of surgical, medical, and dental instruments, equipment and supplies.

*Educational services:* Public and private vocational training; elementary, secondary, and preparatory schools; junior colleges, colleges, universities, and professional schools; educational and scientific research agencies.

*Governmental services:* Including services necessary for the maintenance of health, safety, and morale, and the prosecution of the war.

The Council on Intercultural Relations is interested in collecting, as rapidly as possible, materials on the existing stereotypes and attitudes of the American people toward the cultures and the individual members of countries engaged in the present war. Techniques to be used would include: attitude tests, projective techniques, association tests, collections of informal essays, multiple choice and completion tests, interviews, collection and analyses of current newspaper and moving picture materials. The projected studies could be made in any part of the United States, on any scale, by a single research worker or by a team, using graduate or undergraduate help. The results will be organized in their bearing on the conduct of the war on the psychological front and upon postwar reconstruction. Will psychologists able to cooperate, on a small or large scale, please write at once to: The Secretary, Council on Intercultural Relations, 15 West 77th Street, New York City. Results should be sent in early in December.

Are you engaged in any type of war work? If so, you are urgently requested to write to the Office of Psychological Personnel at once. In order to give adequate information to our colleagues around the country, it is desirable that manuscripts be submitted for the "Psychology and the War" section of the *Psychological Bulletin* covering all phases of psychological work related to the war effort. If you have ideas for an article or a completed manuscript, please send your materials *at once* to the Office of Psychological Personnel, National Research Council, 2101 Constitution Avenue, N.W., Washington, D. C.

## BOOK REVIEWS

THORNDIKE, E. L. *Human nature and the social order.* New York: Macmillan, 1940. Pp. xx + 1019.

Of recent years psychologists have shown new recognition of the problem of the place of value in a world of facts—or, as the present reviewer would prefer to phrase it, the place of facts in a world of values. Köhler's William James lectures in 1934, Thorndike's presidential address to the AAAS in 1935, Hartmann's presidential address to the SPSSI in 1939, not to mention tests such as the adaptation of Spranger made in Allport and Vernon's *Study of Values*—these are signs of this renewal. As early as 1865 Fechner recognized that valuing is a form or an aspect of a person's behavior legitimately falling within the purview of the psychologist's inquiries, and it has been explicitly assumed by experimental esthetics ever since.

The work before us has obviously grown out of the insights and inspiration of the same author's aforementioned address.\* Some passages in Chapters 6, 13, 14, and 15 come from that source, often verbatim. This philosophical viewpoint may be suggested in a few quotations.

"Judgments of values . . . antedate judgments of existence or 'mere fact' in the animal kingdom and in man. . . . They usually . . . refer to and depend upon satisfactions and annoyances, desires for and against" (pp. 340-41). "The natural sciences have not become scientific by eschewing valuation" (349). "The sciences of man prefer to observe the facts of choices . . . rather than assume in advance any speculative doctrines about their causes" (339). "We have . . . possibility and desirability of a natural science of values" (p. 347).

But this accurately titled volume concerns not only "human nature" but also "the social order." "Much of the work of improving the world consists in using the abilities of men to gratify their good wants; and many of the problems which economics, government, law, business philanthropy, and education refer to psychology concern the nature, causation, and modification of either abilities or wants" (4). While Part I, of 15 chapters and 400 pages, is devoted to the descriptive analysis of man's nature, Part II, of 23 chapters and 563 pages, sets forth the author's reflections on political and social problems.

Readers with psychological training will recognize most if not all of the Thorndikean concepts presented in Part I: S→R's, the abilities of men; their factors or components; their measurement in extent, goodness, or level; their populational frequencies and individual differences; man's fundamental wants; the action of satisfiers and of annoyers (with recognition of recent critical findings); generous emphasis on "the influence of the genes"; and the like.

Part II, on the other hand, furnishes the beginnings of a "science of Philanthropy," opening with materials taken from one of the author's earlier articles† on "the Good Life," and arguing for what amounts to an approach to that classic ethical ideal by a method quite other than classical.

\* Thorndike, E. L. *Science and values.* *Science*, 1936, 83, 1-8.

† Thorndike, E. L. *The goal of social effort.* *Educ. Rec.*, 1936, 17, 153-168.

Thorndike analyzes many phases of social life, especially the economic and the political: the welfare of communities, eugenics, treatment of criminals, distribution of income, supply and demand, capital, psychology of labor, of management, the producer-consumer relation, wage ratios, money as a measure of values and preferences, ownership, the ruler-ruled relation, the representative-represented relation, criteria of good government, utilization of persons of superior ability, law and science, the prudent or reasonable man, legal inventions, social justice, reform—these are but a few picked almost at random.

The reader will be disappointed if he expects to find—as he may feel that he has encouraged to find by the fact of inclusion of both Parts in one volume—any clear corollaries or deductions from the psychological survey to these sociological problems. It is as if the author, after insuring that his readers are not too unsophisticated psychologically in a general way, now turns away to a different field of problems. The psychological part is not a prerequisite to the reading of the social part; and the not infrequent reference to how “the psychologist” does or would think about a given social problem might accurately be re-written, how “one man (incidentally a psychologist)” does or would think about it.

The scientific “trustee for humanity” is followed as he analyzes this and realistically appraises that, but his examinations do not lead to increasingly generalizable statements of findings; and the over-500 pages yield no single summary nor formula. They do furnish a superabundance of sapient, discerning, clean-cut and clearly expressed, frequently-stimulating, unfailingly-interesting, observations which have the refreshingly turned literary expressions and the persistent attempt at the concreteness and at quantification of statement that are peculiarly Thorndikean. This is not, then, the system of doctrine, the set of blueprints for this or a post-war world, that some readers might have hoped. Indeed, there is so little of the doctrinaire about it that this reviewer finds it impossible fairly to pigeon-hole the book in terms of the various socio-politico-economic classifications, beyond noting that it could not have been written by a Fascist nor by a Communist. To be sure many quotations could be set up. “Government intervention is now much more fashionable . . . [but] other things being equal, the less of it the better” (762). “Psychology finds little kinship between *vox populi* and *vox dei*” (793). “Equality is a false and useless God for philanthropy . . . is a fantastic goal” (416). “The myth of capital as the oppressor rests upon . . . a misconception” (580). But these are all torn from contexts.

No, this is a book to be opened at any chapter or section, and to be read for the pleasure of its variety and wealth of citation, quotation, and whimsical illustration, and for the clarity and incisiveness of its analyses.

*University of North Carolina.*

JOHN F. DASHIELL.

NICOL, E. *Psicología de las situaciones vitales*. Mexico City: El Colegio de México, 1941. Pp. xxv + 211.

Professor Nicol's offering is a contribution to the conceptual aspect of concrete psychology. Illustrating the fresh and penetrating sophistica-

tion of many Latin-American psychologists, it also exemplifies a Latin-American approach that is perhaps beginning to assume the proportions of a tradition. This approach is dynamic; it emphasizes developmental, social, and cultural factors, and possesses a strongly personalistic flavor. Its novelty of insight is due in no small part to its interesting history, which is incidentally revealed in this introduction to the analysis of "life situations."

In so far as the kind of dynamic psychology now prevailing in the United States as a "working" psychology centers in the concept of adjustment, it derives from functionalism and has some of its roots in James. A popular end-product is the "integrated personality." This end is also regarded by Professor Nicol (as by other Latin-Americans), but in the present instance the non-biological derivation is from German characterologists (Spranger, Klages) and *Geisteswissenschaftler*, and ultimately from James's fellow-dissenter from associationism—Bergson! The difference in pedigree furnishes decidedly novel and provocative effects.

In the first chapter, "Experience, Space, and Time," the author reviews Bergson's radical effort to formulate concrete experiences, comments on the philosopher's failure to capture immediacy by his inevitably analytical method, and points out that *Gestalt* psychology has explained the failure ("there *are* no sensations"). The second chapter, "Temporality and Action," validates Bergson's activism while revealing his inept characterization of the *present*. The third, "On the Living (Being) and the Structure of Life," shows that the present, and hence experience, like temporality and spatiality, are essentially properties of the *person* and must be so understood. The next chapter develops this personalistic approach, and outlines the treatment of all psychological relations in terms of the *situation*. The situation, which has numerous psychological dimensions, is strongly suggestive of Stern's "person-world relation" as a property of "life space." Many situations, however, with their varied dimensionality, may coexist. A final chapter discusses destiny and the characterological analysis of situations.

One is struck by the fact that the word "situation," although not yet a technical term in the English psychological vocabulary, is so profusely used in American works that it is fast becoming a special concept. Professor Nicol's elevation of the word to this rank, in connection with his happy usage of it, thus appears to be a methodological contribution of considerable importance. It is a term that promotes the convergence of diversified categories because it attracts a large array of adjectives (e.g. fundamental, limited, permanent, transitory, economic, social, etc., etc.). "Life situations" are distinguished basically into "fundamental" and "limited" situations; the person is both generic and individualized. The psychology of the person is the locus of his action and outlook "in situations" of many kinds. A situation's makings are partly environmental processes; it is vitalized by an act of choice.

The American reader will miss in all this the familiar references to some adjustive polarity of individual and environment such as belongs to his own psychological tradition. Without in the least contravening biological realities, the omission seems to this reviewer to provide for

richer *psychological* characterization while cutting a great deal of red tape. The flexibility and delicacy of the new conceptual approach also gets away from the mechanicalism of certain leading doctrines. This is strikingly shown in a passage that illustrates the advantages of the concept of "situations" in contrast to the usual description of "complexes" (in depth psychology).

Another omission, for which it is difficult to account, is the author's seeming complete unawareness of the contributions of William Stern, Kurt Lewin, and other personalistically oriented psychologists. The failure to refer to American theories of personality that are somewhat in alignment with the psychology of life situations may be charged fairly to American ignorance of and lack of curiosity about the work of Latin-Americans. This can be repaired in time. It might be said that the very exclusion has worked to the advantage of the Latin-Americans, for it has helped to sharpen up the outlines of a distinctive and promising "tradition." Incidentally, the psychologist who is literate in Spanish has in store an adventure in appreciation on discovering the effectiveness of this language for psychological purposes. Professor Nicol's special interest is the psychology of adolescence, and an application of his theory of life situations to this field, when forthcoming, should prove valuable to all developmental psychologists and students of personality.

HOWARD DAVIS SPOERL.

*American International College.*

SHUTE CLARENCE. *The psychology of Aristotle: an analysis of the living being.* New York: Columbia Univ. Press, 1941. Pp. ix + 148.

In this brief essay the author sets himself the task of describing Aristotle's psychology within a system comprised entirely of activities of the living organism. His theme, then, is behavior interpreted in terms of interaction between the organism and the environing world. Aside from the discussion of various philosophical problems which interested Aristotle in connection with biological phenomena, the present book is concerned with such psychological occurrences as sensing, thinking, remembering, the relation of mind and body, etc., all of which are treated as objective phenomena. In each instance these psychological materials are described as activities of organisms fulfilling their functions as definitely engendered and growing animals.

For two reasons the author is to be commended for carrying through his objective treatment. In the first place, this procedure bespeaks a close preoccupation with Aristotle's actual texts. Secondly, the study of Aristotle and his work as mirrors of Greek culture is a much needed antidote to the prevailing custom of misinterpreting Aristotle as the inventor of medieval doctrines.

*Indiana University.*

J. R. KANTOR.

ROETHLISBERGER, F. J. *Management and morale.* Cambridge: Harvard Univ. Press, 1941. Pp. xxii + 194.

To those who are acquainted with the record of fifteen years of research in the Hawthorne plant of Western Electric, this thin volume will

bring little new save an excellent summary and a nostalgia for the days when 'morale' had to do chiefly with conditions in industrial production. To those who have missed *Human Problems of an Industrial Civilization* and its lineal descendants, Roethlisberger's manuscript is almost certain to open new and exciting pathways.

Introductory chapters recite the background of a decade-and-a-half of intimate industrial research and tell again the story of the relay room where production continued to increase in the face of conditions that were made 'adverse.' The reader learns that the meaning of an industrial change can be more important than the change itself; that the latent content of an industrial interview can be more meaningful than the manifest content; and that the sentiments of workers are dynamic in nature and ill suited to control by logic. The importance of the informal social organizations among workers is clearly demonstrated, as is the significance of hours and wages as carriers of social values. The concept of social distance is ably discussed and the problem of communication 'up' and 'down' within the industrial organization is thoughtfully treated. The chapter "Of Words and Men" warrants reading by any social psychologist and most particularly by those social psychologists who deal with industrial or military problems. The author adds little, however, either to his own stature or to the significance of the volume in those chapters which deal with the systematic interpretation of the facts and principles presented in the earlier chapters.

As a volume which presents a collection of lectures, Roethlisberger's book achieves about as much coherence as any such volume does—which is to say, very little. An earlier volume was criticized because he and his associates ignored work done elsewhere. In the present volume this becomes an irritating provincialism, dealing with a world which begins and ends with those who have trod the revered corridors at Cambridge and ignoring all others, from the British Industrial Health Board to certain able compatriots in industrial psychology. There is so much able writing in the book that one resents the occasional and florid lapses which lead the author to write of the Hawthorne work as a "revolutionary idea" discovered *de novo* in 1928 and to add that "In that year a new era of personnel relations began." Such appraisals would better be bestowed by others and not eagerly appropriated by one of the progenitors of the "New Era."

One hopes that many will read this volume, particularly if they are unacquainted with its predecessors. Those who do will mark it as an important contribution to the study of human behavior—social human behavior—in industry. There will be some who will agree with this reviewer in assigning this and its companion volumes a place within active reach on the shelf of imperative references. At the same time, one would be gratified if the place in the war effort earned by this research should lead the author to discover the broad lands that lie beyond the Charles and the writings of those who have labored elsewhere in studying complex human interrelationships in the world of work.

JOHN G. JENKINS.

*U. S. Navy Bureau of Aeronautics.*

HILDRETH, GERTRUDE. *The child mind in evolution: a study of developmental sequences in drawing, with many illustrations.* New York: King's Crown Press, 1941. Pp. vi + 163 + 26 pp. plates.

In this longitudinal study of the development of one form of creative expression in a single child, Hildreth has made an interesting contribution to the literature on children's drawings. The data of her investigation consisted of a series of 4022 drawings made by one boy between the ages of two and eleven years. Of these, 2239 were drawings of locomotives and trains. It is with this group that the study is chiefly concerned.

After a brief description of the child's personality and interests and of the conditions under which the drawings were made, the author presents a brief summary of the main characteristics of the drawings made in each successive year. A roughly quantified indication of growth in drawing is given in terms of the number of new features appearing at each age. The associated development in numbering, and writing, as shown by the titles and labels on the various drawings is also discussed, and several stories and poems about trains, written toward the end of the period, are reproduced. The final chapter, entitled "Psychological Interpretations" deals with a number of special topics such as the tendency to draw the whole structure, the interlocking processes of differentiation and synthesis, the growth of perception and of concepts as revealed in drawing.

A bibliography of 24 titles is followed by 26 pages of reproductions of the child's drawings, grouped according to the age at which they were produced.

FLORENCE L. GOODENOUGH.

*University of Minnesota.*

CHAMBERS, E. G. *Statistical Calculation for Beginners.* Cambridge, Eng.: Univ. Press (Macmillan), 1940. Pp. viii + 110.

This little book differs markedly from the usual text in elementary statistics. It is better written, being much more concise and effective. The contents are differently selected, as will be pointed out. And finally, in the inclusion of material on such topics as partial correlation, biserial correlation, eta, and contingency, it goes beyond the ordinary introductory text.

The reviewer is not particularly impressed by the tendency of authors to prepare elementary statistics books with the assumption that students will have just the barest mathematical training and ability. There is something particularly unrefreshing about volumes which present verbalizations on statistics, while avoiding the subject-matter of statistics. In this respect, in spite of the blurb, Chambers' book is less offensive than most of our elementary texts. The author succeeds in presenting many of the basic concepts, although he avoids the mathematical derivations.

The book leans heavily upon the various published works of R. A. Fisher and of Yule for reference material, tables to be consulted, and proofs of formulas. Reference is made to Pearson's tables, even for the simpler handling of normal curve relationships. The omission of proofs results in emphasis upon arithmetical processes, and neglect of some im-

portant concepts. In the average textbook, such omissions often result in an unfortunate idea of the nature of statistics; Chambers, however, does seem to avoid this pitfall.

The traditional material on measures of central tendency and variability is presented very briefly and descriptively. The treatment of the normal distribution is unusual, since it omits the customary abbreviated tables of normal curve functions and all the usual accompanying discussion, and offers little beyond a sample of the technique of testing for normality by the method of moments. This discussion is good, but one doubts that it will be very meaningful to those with little training in mathematics. Even the notation of statistics is difficult for such students, and there is a limit to the extent of penetration in the field of statistics by persons unfamiliar with the most simple mathematical processes.

The treatment of the significance of differences between means is conservative, as is also the discussion of correlation. The author has been more successful than most writers in presenting the fundamental idea of sampling and inference. There is a very clear account of regression and the correlation ratio, and an excellent section is devoted to discussion of contingency methods. The numerous exercises in the use of Chi-Square are good learning materials. The book is characterized generally by simple problems worked out for the student, and suitable exercises to illustrate and clarify the fundamental methods.

Finally, it should be noted that although Chambers has not assumed a prerequisite knowledge of mathematics, he has implicitly assumed that the students will be intelligent. As a result, his book is brief, clear, interesting, and useful.

HAROLD D. CARTER.

*University of California.*

PETERS, C. C., and VAN VOORHIS, W. R. Statistical procedures and their mathematical bases. New York: McGraw-Hill, 1940. Pp. xiii+516.

Peters and Van Voorhis have perceived an important problem, how to teach an essentially mathematical subject to students without mathematical preparation. It cannot be said that their text provides a definitive solution. The first chapter gives a fairly accessible introduction to the differential and integral calculus, though it may not enable the average student to follow all of the calculus which appears later in the text. The most notable omission is a chapter on theory of probability, which is the mathematical basis of all statistical inference.

The authors recommend that the student read Fisher's article on "Inverse probability," "which he will not find very difficult." (139.) The substance of Fisher's article is that knowledge of population parameters enables us to assign probabilities to statements about sample values; knowledge of sample statistics does *not* allow us to make probability statements about population values but does affect our degree of belief in hypotheses about populations. Peters and Van Voorhis assign probabilities to statements about population parameters on pages 137, 175, 186, 187, and elsewhere. For example, "A ratio of 0.7 between a

difference and its standard error indicates chances of only 3.1 to 1 that the true difference lies in the same direction." (184.) Use of inverse probability obscures the important question, not mentioned in this book, of how large the true difference must be in order to have a reasonable chance of being detected with a sample of a given size.

The assumptions underlying statistical techniques are consistently difficult to find, and in some cases the examples involve straightforward violations of assumptions. The fundamental additive assumption of factor analysis is presented not as an assumption but as a conclusion, and no attempt is made to examine its meaning in relation to various types of psychological data. Similarly, the criteria for simple structure are presented as arbitrary rules for rotation without any psychological rationale. The reader is not informed that there are any limitations to the use of the critical ratio; all sorts of differences are divided by their standard errors and interpreted as if any such ratio were normally distributed. In the section on the significance of the difference between percentages, the percentages compared happen to be 99.48 and 97.65, too high to permit an assumption of normality even for the relatively large number of cases involved. Another misleading numerical example is the illustration of chi-square in Table XXXV. Although on page 417 we find, "The chi-square technique is not sound unless the numbers in the cells are reasonably large," on page 411 the theoretical frequency in each cell is two.

The organization of topics is novel if not entirely logical or convenient. Chapters on correlation theory are interspersed with chapters on sampling error theory; and while standard errors are interpreted in terms of the normal distribution in chapters V and VI, the normal curve is not derived until chapter X. The use of Student's and Fisher's tables of  $t$  is described at length in chapter VI, "The reliability of differences," but instructions for entering the table when  $t$  is used to compare two unmatched groups are not given until chapter XII, "The analysis of variance."

This book can hardly be recommended to research workers, for instructions for the use of formulas and tables are not readily accessible; nor to beginning students, for the number of sheer mistakes is larger than one expects to find in print. But persons who already have considerable background in statistics will find some of the derivations original and the sequence of topics in some cases provocative of new insight.

JANE LOEVINGER.

*University of California.*

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## NOTES AND NEWS

DR. C. C. BUNCH, research professor in education of the deaf in the School of Speech at Northwestern University, died on June 14 at the age of fifty-seven years.

DR. WILLIS D. ELLIS, assistant professor of psychology, University of Arizona, died on Tuesday, July 21.

DR. C. E. FERREE died July 26 of coronary occlusion at the age of sixty-five years. He was director of the research laboratory of physiological optics, Baltimore, Maryland. Previously he had been professor of physiological optics and director of the laboratory of physiological optics of the Wilmer Ophthalmological Institute of the Johns Hopkins University School of Medicine. Still earlier he had been for many years professor of experimental psychology and director of the psychological laboratory, Bryn Mawr College.

The retirement is announced of DR. ALBERT H. WALTON, associate professor of psychology at the Pennsylvania State College.

The retirement of DR. CLARK WISSLER, curator of anthropology of the American Museum of Natural History, was announced on July 16.

PAUL BOYNTON, professor of psychology, the George Peabody College for Teachers (Nashville), has been elected president of the Stephen F. Austin State Teachers College (Nacogdoches, Texas).

JACK R. GIBB has been advanced from instructor in psychology to assistant professor at Brigham Young University (Provo, Utah).

DR. W. A. KERR, Purdue University, has been appointed director of personnel research for the RCA Manufacturing Company, Inc., Indianapolis, Indiana.

LOU L. LABRANT, professor of English education, Ohio State University, has been appointed professor of English education at New York University.

A. MERLIN SONES, instructor in psychology, Drexel Institute of Technology, has been appointed assistant to D. L. Stratton, dean of men.

DR. J. EDWARD TODD, formerly professor of educational psychology and director of student relations and personnel at Springfield College (Mass.), has been appointed assistant to Harry F. Lewis, dean of the Institute of Paper Chemistry, Appleton, Wisconsin.

DR. LOUIS P. THORPE of the University of Southern California has been appointed director of the psychological clinic to succeed DR. LEE EDWARD TRAVIS now with the U. S. Army.

WINIFRED K. MAGDSICK, of the department of psychology, has been appointed assistant dean, College of Liberal Arts, Washington University, St. Louis.

The University of Wyoming conferred the honorary degree, Doctor of Laws, on DR. JOHN E. ANDERSON, June 8, 1942.

Park College on May 25 conferred the honorary doctorate of science on DR. ROSS A. MCFARLAND, of Harvard University, who gave the commencement address.

CHARLES E. BENSON, chairman of the department of educational psychology, New York University, is on leave of absence for the academic year, 1942-43. BRIAN EARLE TOMLINSON, associate professor of education, will be chairman of an administrative committee to direct the work of the department during Dr. Benson's absence.

At the State University of Iowa, DR. KENNETH W. SPENCE, since the death of DR. JOHN A. McGEOCH temporary chairman of the department of psychology, has been made chairman; DR. ROBERT R. SEARS, formerly of Yale University, has been appointed Director of the Iowa Child Welfare Research Station to succeed DR. GEORGE D. STODDARD, now New York State Commissioner of Education, who was also dean of the Graduate College. DEAN EMERITUS CARL E. SEASHORE is serving as interim dean of the Graduate College until a successor to Dr. Stoddard is appointed.

The National Research Fellowship Board in the Natural Sciences of the National Research Council has appointed JOSEPH CARL ROBNETT LICKLIDER (Ph.D., psychology, University of Rochester, 1942) to a fellowship for the year 1942-43 to work at Harvard University on the effects of previous acoustic stimulation upon sound localization.

Among the sixty-five awards recently awarded by the Social Science Research Council for the academic year 1942-43, were the following made to psychologists:

*Post-Doctoral Research Training Fellows:*

ELSE FRANKEL BRUNSWIK, Ph.D., University of Vienna, research associate in psychology, Institute of Child Welfare, University of California, for advanced academic training in sociology and anthropology.

THEODORE R. SARBIN, Ph.D., Ohio State University, research associate in psychology, University of Minnesota, for training in psychiatric methods in social psychology. (Reappointment).

*Pre-Doctoral Field Fellows:*

JOHN BENTON GILLINGHAM, social psychology, University of Wisconsin, for field training with reference to "white collar" employees in selected industrial organizations.

*Grant-In-Aid Appointees:*

ROGER G. BARKER, assistant professor of education, University of Illinois, for the completion of an investigation of the effects of severe, long-continued frustration upon behavior.

ROSALIND GOULD, research associate, The Bank Street Schools, New York City, for the completion of an experimental investigation of repression.

ERNEST R. HILGARD, professor of psychology and education, Stanford University, for the completion of a study of the social aspects of housing.

HELEN BLOCK LEWIS, instructor in psychology, Brooklyn College, for the completion of an experimental study of the role of the ego in cooperative and competitive work.

HENRY S. ODBERT, assistant professor of psychology, Dartmouth College, for the completion of an analysis of a word and phrase test.

In June, 1942, the Psychological Corporation announced the establishment of the James McKeen Cattell Grants-in-aid of Research in Applied Psychology. The principal purpose of these grants is to aid to research already under way by increasing the scope of the study or by permitting more intensive analysis of the data. In September the Psychological Corporation announced the award of the James McKeen Cattell Grants-in-aid for the academic year 1942-1943 to HARRY C. STEINMETZ, associate professor of psychology, San Diego State College, San Diego, California; HAROLD H. ANDERSON, associate professor of psychology, University of Illinois, Urbana, Illinois; DELTON C. BEIER, Testing and Guidance Bureau, Louisiana State University, Baton Rouge, Louisiana, and ELEANOR O. MILLER, professor of psychology and chairman of the department, Illinois College, Jacksonville, Illinois.

The Washington-Baltimore Branch of the American Psychological Association held its fourth meeting of the academic year at the University of Maryland, College Park, Maryland, on May 14, 1942.

The program of contributed papers was as follows:

1. Miss DOROTHY ADKINS, Department of Social Security, "Problems of Test Construction in Civil Service Jurisdictions."
2. DR. RENSIS LIKERT, Department of Agriculture, "Psychological Research as a Tool of Democratic Processes."
3. DR. STEWART H. BRITT, The George Washington University, "The Activities of the Office of Psychological Personnel."

The following officers were elected for the coming year: *President*: DR. WENDELL W. CRUZE, Wilson Teachers College. *Vice-President*: DR. J. M. STEPHENS, The Johns Hopkins University. *Secretary*: DR. J. W. MACMILLAN, University of Maryland. *Treasurer*: MRS. MILDRED St. MARTIN PERCY, District of Columbia Public Schools.

At the Annual Meeting of the American Psychological Association in New York City, September 3, 1942, the Election Committee reported elections as follows: *President*, JOHN E. ANDERSON; *Council of Directors*, SIDNEY L. PRESSEY and ROBERT H. SEASHORE; *Nominess for Representatives on the National Research Council*, JOHN E. ANDERSON, ARTHUR G. BILLS, and HADLEY CANTRIL; *Representative on the Social Science Research Council*, WALTER S. HUNTER.

At its Sixth Annual Meeting Held in New York City on September 4, 1942, the American Association for Applied Psychology announced the elections of LT. COMMANDER C. M. LOUTTIT, USNR as *President*, and of DR. ALICE I. BRYAN, Columbia University, as *Executive Secretary*.

The L. B. Fischer Publishing Corporation of 381 Fourth Avenue, New York, announces the publication of a new series of low priced (\$1.25) pocket-sized books designed to service the student and intelligent reader by dealing authoritatively with varied aspects of modern scientific knowledge. The series is to be known as the Treasury of Science and is under the supervision of a distinguished Board of Editors. It is the publisher's intention to add at least 24 volumes every year. The publishers invite correspondence regarding manuscripts.

Research workers seeking instruments required in their work but difficult to find are invited to communicate with D. H. Killeffer (60 East 42 Street, New York City), chairman of the newly appointed Committee on the Location of New and Rare Instruments of the National Research Council. The plan is to assist in locating needed instruments of types not ordinarily available through usual channels. Assistance is particularly desired from owners and builders of instruments falling within the new or rare categories which might be made available to others through sale or for temporary use under mutually satisfactory conditions.

#### CORRECTION

In the abstract by OLIVER L. LACEY on page 511 of this volume, the second sentence in the second paragraph which reads "The susceptible animals were higher than normal in blood sugar and red cell concentration, and lower in total protein," should read, "The susceptible animals were *lower* than normal in blood sugar and red cell concentration, and *higher* in total protein."

#### NOTICE

Because of priorities in printing, slowness of mail, and other delays incident to the war effort, it may be somewhat difficult to distribute the *Psychological Bulletin* on the first of the month according to schedule. While every effort will be made to maintain the schedule, subscribers are asked to be patient in the face of the delays that may occur from time to time.

